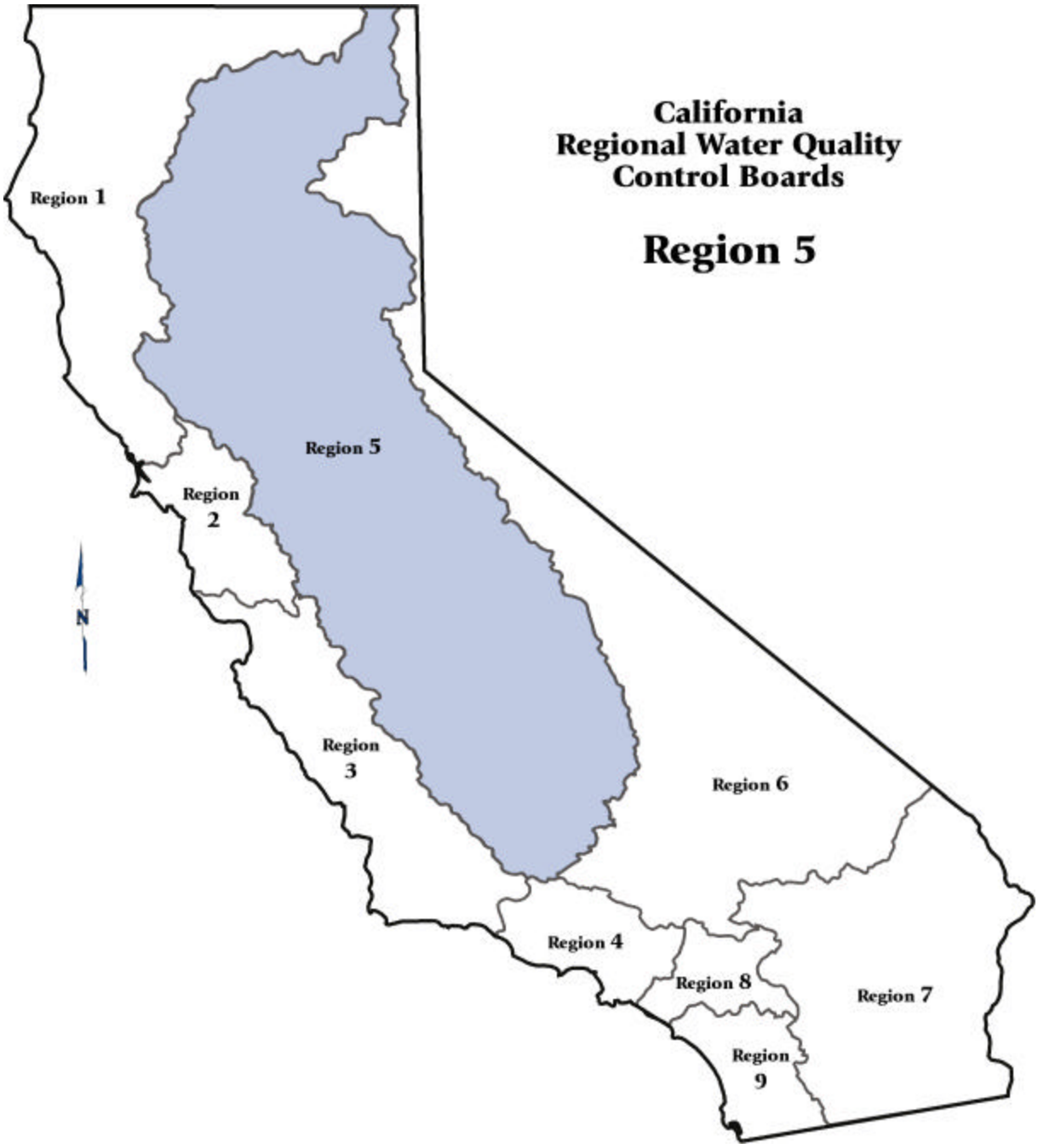
Fact Sheets Supporting
Revision of the Section 303(d) List



September 2005

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Central Valley Region (5)

LIST

Recommendations to place waters and pollutants on the section 303(d) List

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Region 5

Water Segment: American River, South Fork

Pollutant: Mercury

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.5 of the Listing Policy. Under section 3.5 a single line of evidence is necessary to assess listing status.

Two lines of evidence are available in the administrative record to assess this pollutant. A large number of samples exceed the mercury tissue guideline. The listing should start below Slab Creek Reservoir.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The guideline used satisfies the requirements of section 6.1.3 of the Policy.
2. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
3. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
4. Eleven of 24 samples exceeded the mercury guideline and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
5. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Tissue

Beneficial Use: CM - Commercial and Sport Fishing (CA), CO - Cold Freshwater Habitat

Matrix: Tissue

Water Quality Objective/ All waters shall be maintained free of toxic substances in concentrations that

Water Quality Criterion:	produce detrimental physiological responses in human, plant, animal, or aquatic life. The objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.
Evaluation Guideline:	An OEHHA guideline of 0.3 mg/kg ww was used (Brodberg and Pollock, 1999).
Data Used to Assess Water Quality:	Eleven of 24 samples exceeded the mercury tissue guideline. Fish tissue was analyzed from Sacramento pike minnow, rainbow trout, and brown trout. The reporting limit was 0.01 mg/kg (CDFG, 2005).
Spatial Representation:	Samples were collected in one location in the Camp Lotus reach of the South Fork of the American River.
Temporal Representation:	Samples were collected between 6/15/2004 and 7/29/2004.
Data Quality Assessment:	DFG Office of Spill Prevention and Response Laboratory QAPP. Data quality requirements acceptable.

Line of Evidence	Testimonial Evidence
Beneficial Use	CM - Commercial and Sport Fishing (CA), CO - Cold Freshwater Habitat
Information Used to Assess Water Quality:	Information from RWQCB staff: The listing should start below Slab Creek Reservoir. Some data from 2002 shows no problem downstream of the reservoir.

Region 5

Water Segment: Bear River (Amador Co, Lower Bear River Reservoir to Mokelumne River, N Fork)

Pollutant: Copper

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under sections 3.1 of the Listing Policy. Under section 3.1 a single line of evidence is necessary to assess listing status.

Two lines of evidence are available in the administrative record to assess this pollutant. Based on section 3.1, nearly all of the measurements exceed the water quality criterion and the pollutant is likely to cause or contribute to the toxic effect.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Sixty-seven of 69 samples exceeded the hardness based criteria from USEPA (CTR) for freshwater acute (CMC), 4 of 5 measurements exceed the NTR value for total copper, and these exceed the allowable frequency listed in Table 3.1 of the Listing Policy.
5. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: CO - Cold Freshwater Habitat, WA - Warm Freshwater Habitat

Matrix: Water

Water Quality Objective/ Water Quality Criterion:	Hardness-based criteria from USEPA (CTR) for freshwater acute (CMC).
Data Used to Assess Water Quality:	Sixty-seven of 69 samples exceeded the hardness-based CTR criterion for dissolved copper. [Historical Water Quality Results for Analytical Laboratory Measurements PG&E Company Mokelumne River Project (FERC 137)] (PG&E, 2003b).
Spatial Representation:	Bear River below Lower Bear River Reservoir.
Temporal Representation:	Samples taken between 2000 and 2003.
Data Quality Assessment:	Well documented QA/QC including report on Certified Analytical Reports and chain of custody documentation.

Numeric Line of Evidence	Pollutant-Water
Beneficial Use:	CO - Cold Freshwater Habitat, WA - Warm Freshwater Habitat
Matrix:	Water
Water Quality Objective/ Water Quality Criterion:	USEPA National Ambient Water Quality Criterion for the protection of aquatic life.
Data Used to Assess Water Quality:	Four of 5 samples from this location exceeded the standard for total copper. Preliminary Mokelumne River Supplemental Copper Sampling Results (PG&E, 2003b).
Spatial Representation:	Bear River below Lower Bear River Reservoir.
Temporal Representation:	Samples taken monthly from 2002 to 2003.
Data Quality Assessment:	Well documented QA/QC including report on Certified Analytical Reports and chain-of-custody documentation.

Region 5

Water Segment: Carson Creek (from WWTP to Deer Creek)

Pollutant: Aluminum

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.1 of the Listing Policy. Under section 3.1 a single line of evidence is necessary to assess listing status.

One line of evidence is available in the administrative record to assess this pollutant. Three samples exceed the chemical constituents water quality objective.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Three of 11 samples exceeded the MCLs Secondary criteria; 2 of the 3 exceeded the Primary MCL criteria and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: MU - Municipal & Domestic

Matrix: Water

Water Quality Objective/ At a minimum, water designated for use as domestic or municipal supply

Water Quality Criterion:	(MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan.
Evaluation Guideline:	MCLs Title 22 Primary and Secondary.
Data Used to Assess Water Quality:	Two out of 11 samples exceed the secondary MCL. Three measurements of 11 exceed the Primary MCL. All receiving water samples were grab samples.(Central Valley RWQCB, 2003a).
Spatial Representation:	Samples were collected at one station.
Temporal Representation:	Receiving water samples were collected from March 2001 through Feb. 2002.
Data Quality Assessment:	The effluent and receiving water monitoring study was initiated in March 2001, consistent with the QAPP prepared by RBI (RBI 2001) and submitted to and reviewed by the RWQCB permitting staff.

Region 5

Water Segment: Carson Creek (from WWTP to Deer Creek)

Pollutant: Copper

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.1 of the Listing Policy. Under section 3.1 a single line of evidence is necessary to assess listing status.

One line of evidence is available in the administrative record to assess this pollutant. Two samples exceed the chemical constituents water quality objective.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Two of 11 samples exceed the CTR Freshwater acute criteria and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: CO - Cold Freshwater Habitat

Matrix: Water

Water Quality Objective/ Waters shall not contain chemical constituents in concentrations that adversely

Water Quality Criterion:	affect beneficial uses.
Evaluation Guideline:	CTR Hardness-based Freshwater Acute criterion (13.44 ppb).
Data Used to Assess Water Quality:	Two out of 11 samples exceed the CTR criterion based on an assumed hardness of 100 mg/L as CaCO3 (Central Valley RWQCB, 2003a).
Spatial Representation:	One station was sampled.
Temporal Representation:	Samples were collected from March 2001 through Feb. 2002.
Data Quality Assessment:	The effluent and receiving water monitoring study was initiated in March 2001, consistent with the QAPP prepared by RBI (RBI 2001) and submitted to and reviewed by the RWQCB permitting staff.

Region 5

Water Segment: Carson Creek (from WWTP to Deer Creek)

Pollutant: Manganese

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.1 of the Listing Policy. Under section 3.1 a single line of evidence is necessary to assess listing status.

One line of evidence is available in the administrative record to assess this pollutant. A majority of the samples exceed the chemical constituent water quality objective.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Three of 4 samples exceeded the DHS Title 22 Secondary MCL criteria (0.05 mg/L) and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: MU - Municipal & Domestic

Matrix: Water

Water Quality Objective/ At a minimum, water designated for use as domestic or municipal supply

Water Quality Criterion:	(MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan.
Evaluation Guideline:	DHS Title 22 Secondary MCL Human Health criterion.
Data Used to Assess Water Quality:	Three out of 4 samples exceed the exceed the manganese MCL based on an assumed hardness of 100 mg/L as CaCO3 (Central Valley RWQCB, 2003a).
Spatial Representation:	One station was sampled.
Temporal Representation:	Samples were collected from March 2001 through Feb. 2002.
Data Quality Assessment:	The effluent and receiving water monitoring study was initiated in March 2001, consistent with the QAPP prepared by RBI (RBI 2001) and submitted to and reviewed by the RWQCB permitting staff.

Region 5

Water Segment:	Clear Lake
Pollutant:	Mercury
Decision:	List
Weight of Evidence:	This pollutant is being considered for listing under section 2.2 of the Listing Policy. Under this section of the Policy, a minimum of one line of evidence is needed to assess listing status. One line of evidence is available in the administrative record to assess this pollutant. Based on the applicable factor, a TMDL has been developed and approved by USEPA and an approved implementation plan is expected to result in attainment of the standard. Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination in the Water Quality Limited Segments Being Addressed portion of the section 303(d) list.
SWRCB Staff Recommendation:	After review of the available data and information for this recommendation, SWRCB staff conclude that the water body should be placed in the Water Quality Limited Segments Being Addressed category of the section 303(d) list because a TMDL has been approved by USEPA and an implementation plan has been approved.

Lines of Evidence:

Line of Evidence	Remedial Program in Place
Beneficial Use	CM - Commercial and Sport Fishing (CA), WA - Warm Freshwater Habitat
Information Used to Assess Water Quality:	The Clear Lake watershed contains the Sulphur Bank mercury mine, a USEPA Superfund site. This TMDL was completed in 2003 and approved by USEPA on 10/20/03. This TMDL is in the implementation phase. Completion of tasks is dependent on funding from federal and state TMDL programs.

Region 5

Water Segment: Cosumnes River

Pollutant: Exotic Species

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.10 of the Listing Policy. Under section 3.10 two lines of evidence are necessary to assess listing status.

Two lines of evidence are available in the administrative record to assess this pollutant. Over a three-year period, this study strongly indicated that non-native presence was responsible for sharp native species abundance declines in the Cosumnes River basin.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. This study was conducted from 1999-2001.
2. Trends analysis was examined using Pearson Correlation Coefficients between abundances of fish species at forty-four sampling sites.
3. Where non-native fish species were present, native fish species abundance was low or non-existent. Natives had been extirpated from many sites.
4. Some natives distribution overlapped with non-natives, highly suggesting that predation by non-natives was responsible for native abundance declines. This model supports the overall pattern of gradual disappearance of native fishes from the Cosumnes basin.
5. It cannot be determined if the trend in water quality is expected to meet water standards by the next listing cycle.
6. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence	Population/Community Degradation
Beneficial Use:	WA - Warm Freshwater Habitat
Matrix:	Water
Water Quality Objective/ Water Quality Criterion:	All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Water Board. Taken from Region 5 Basin Plan, Page III-8.00, Water Quality Objectives.
Data Used to Assess Water Quality:	Fish species were studied over a three-year period from 1999-2001. Of the 25 species collected, 17 were non-native species, and 14 were native species (Moyle et al., 2003). Rainbow trout was the only native species that occupied much of its native range in headwater streams protected from invasion of non-natives due to downstream barriers. Non-native species were found primarily in low-land habitats on the valley floor of the foothills. Where non-native fish species were present, native fish species abundance was low or non-existent. Trends analysis was examined using Pearson Correlation Coefficients between abundances of fish species at forty-four sites.
Spatial Representation:	July, August and September of 1999-2001, this study sampled a total of 44 sites throughout the Cosumnes River watershed. Twenty four of the sites were sampled once in the 3-year period, 14 sites were sampled twice, and 8 sites were sampled all 3 years. At each site, 50 to100m of stream for fish was sampled.
Temporal Representation:	Sampling occurred in July, August and September of 1999, 2000 and 2001.
Environmental Conditions:	Changes in relative diversity and abundance of native species may also be driven by habitat alteration, flow changes, or hydromodification.
Data Quality Assessment:	Peer Reviewed Journal Article.

Region 5

Water Segment: Deer Creek (Sacramento County)

Pollutant: Iron

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.1 of the Listing Policy. Under section 3.1 a single line of evidence is necessary to assess listing status.

One line of evidence is available in the administrative record to assess this pollutant. Five samples exceed the water quality objective.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Five of 12 samples exceeded the chemical constituents water quality objective and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: AG - Agricultural Supply, CM - Commercial and Sport Fishing (CA), CO - Cold Freshwater Habitat, MI - Fish Migration, MU - Municipal & Domestic, R1 - Water Contact Recreation, R2 - Non-Contact Recreation, WI - Wildlife Habitat

Matrix: -N/A

Water Quality Objective/ Water Quality Criterion:	Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels- Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect.
Evaluation Guideline:	California DHS Secondary MCL metal (300 ug/l).
Data Used to Assess Water Quality:	All receiving water samples were grab samples. Concentrations of iron (expressed as total recoverable) ranged from 50 ug/l in June 2002 to 590 ug/l in May 2002. The samples collected in February, May, July, August and December 2002 had total recoverable iron concentrations ranging from 300 to 590 ug/l, which are greater than the DHS secondary MCL of 300 ug/l. Five samples out of 12 receiving water samples contained levels of total recoverable iron that exceeded the MCL (Central Valley RWQCB, 2003a).
Spatial Representation:	The Deer Creek Wastewater Treatment Plant is located in the Section 16, T9N, R9E, MDB&M, adjacent to Deer Creek, a tributary to the Cosumnes River. Receiving water samples were collected at the NPDES permit R1 monitoring location, which is located in Deer Creek at the gauging station upstream of the point of discharge at the first bridge crossing Deer Creek as part of the access road to the DCWWTP.
Temporal Representation:	Receiving water sampling was conducted between February 2002 and February 2003.
Data Quality Assessment:	The QAPP demonstrates that all field-sampling procedures were conducted in a technically appropriate, efficient, and cost-effective manner, ultimately contributing to the project goals.

Region 5

Water Segment: Del Puerto Creek

Pollutant: Pyrethroid

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.6 of the Listing Policy. Under section 3.6 a single line of evidence is necessary to assess listing status.

Two lines of evidence are available in the administrative record to assess this pollutant. Based on section 3.6 the site has significant sediment toxicity and the pollutant is likely to cause or contribute to the toxic effect. A TIE is available that indicates pyrethroid pesticides are a likely cause of toxicity.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Five of 7 samples exhibit sediment toxicity and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy. A TIE is has been completed and the likely cause of toxicity is pyrethroid pesticides.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Toxicity

Beneficial Use: MI - Fish Migration, SP - Fish Spawning, WA - Warm Freshwater Habitat, WI - Wildlife Habitat

Matrix:	Sediment
Water Quality Objective/ Water Quality Criterion:	Waters are to remain free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal or aquatic life. Toxicity may be caused by a single substance or the interactive effect of multiple substances (Region 5 Basin Plan, September, 1998)
Data Used to Assess Water Quality:	Five out of seven samples displayed statistically significant toxicity in the survival endpoint when compared to the negative control based on a statistical test with alpha of less than 5%. All samples were tested using the 10-day Hyalella azteca test. Samples were collected at: -Del Puerto Creek at Vineyard, on 10/9/2001, 5/29/2002 (CVRWQCB, 2002), 10/28/2002, 9/11/2002 (CVRWQCB, 2002), 4/11/2003 -Del Puerto Creek at Hwy 33 on 10/28/2002 -Del Puerto Creek 100 feet upstream of Vineyard Lane bridge on 10/28/2002 -note: samples also were collected from Del Puerto Creek at Rogers Road on 10/28/04; however, these samples did not meet the QA requirements, and have not been included in the counts (SWAMP, 2004).
Spatial Representation:	Samples were collected at three sites. Toxicity in the survival endpoint was detected at two sites.
Temporal Representation:	Samples were collected between October 2001 through October 2002. Samples were collected October 9, 2001 at Vineyard; October. 28, 2002 at Highway 33, Vineyard, and 100 feet upstream of the Vineyard Lane bridge, and May 29, 2002 at Vineyard.
Environmental Conditions:	San Joaquin River Sub-Basin; located in Stanislaus County, on the west side of the valley floor. This stream reaches the San Joaquin River downstream of the Merced River mouth and upstream of the Tuolumne River. The sampling sites are located at Del Puerto Creek at Vineyard, Del Puerto Creek at Rogers Road, Del Puerto Creek at Highway 33, Del Puerto Creek 100 feet upstream of Vineyard Lane bridge.
Data Quality Assessment:	SWAMP QAPP. None of the samples displaying toxicity in the survival endpoint and considered as part of the data assessed had any associated QA qualifiers. Samples also were collected from Del Puerto Creek at Rogers Road on 10/28/04; however, these samples did not meet the QA requirements, and were not considered here.

Line of Evidence	Pollutant-Water
Beneficial Use	MI - Fish Migration, SP - Fish Spawning, WA - Warm Freshwater Habitat, WI - Wildlife Habitat
Non-Numeric Objective:	Waters are to remain free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal or aquatic life. Toxicity may be caused by a single substance or the interactive effect of multiple substances (Region 5 Basin Plan, September, 1998)

Data Used to Assess Water Quality:	Toxicity Identification Evaluations (TIEs) were conducted on samples collected from Del Puerto Creek at Vineyard on 5/29/2002 and 9/11/2002. Toxicity was increased by the following TIE manipulations: addition of PBO and decrease of test temperatures, both suggesting evidence of pyrethroid pesticides (CVRWQCB, 2002).

Region 5

Water Segment: Delta Waterways (Stockton Ship Channel)

Pollutant: Exotic Species

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.10 of the Listing Policy. Under section 3.10 two lines of evidence are necessary to assess listing status.

Two lines of evidence are available in the administrative record to assess this pollutant. There have been numerous studies since the late 1960's showing sharp declines in phytoplankton biomass and in native species, such as the delta smelt, which has declined ten-fold over the last 20 years. Non-native species are believed to be responsible, in part, for this alteration in the delta food web and extirpating native species.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. There are numerous studies since the late 1960's.
2. Baseline data is from data acquired from these earlier studies.
3. Trends were determined using statistical analyses on graphs and tables.
4. Summer chlorophyll a decreased markedly after invasion of the non-native Asian clam. Phytoplankton is a significant source during the spring and summer for many species in the delta.
5. Phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels. Some non-native species compete with zooplankton for food, or alter species composition of the food web. In areas where non-natives are abundant, native fishes are rare or absent.
6. It cannot be determined if the trend in water quality is expected to meet water standards by the next listing cycle.
7. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence	Population/Community Degradation
Beneficial Use:	WA - Warm Freshwater Habitat
Matrix:	Water
Water Quality Objective/ Water Quality Criterion:	All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Water Board. Taken from Region 5 Basin Plan, Page III-8.00, Water Quality Objectives.
Data Used to Assess Water Quality:	Thousands of chlorophyll-a measurements have been made in the Delta since the late 1960s and 55-93% of them, depending on the year, are below 10 ug/L. Growth rates of some primary consumers are closely tied to phytoplankton availability below about 10ug/L. There is a statistically significant downward trend of phytoplankton from 1975-1995 (Jassby et al., 2003). In 1986 the non-native Asian clam invaded Suisun Bay. The Asian clam is a consumer of phytoplankton, changing phytoplankton dynamics in Suisun Bay and the western Delta. Summer chlorophyll decreased markedly after the Asian clam invaded and phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels of the Delta. Some non-native species compete with zooplankton for food, or alter species composition of the food web, affecting native species survival. Recent studies in the central Delta show that introduced fishes dominate (USFWS, 2004. Five-Year Review of Recovery Plan for Delta Smelt. Federal Register 68(148):45270-45271). In areas where non-natives are abundant, native fishes are rare or absent. Over the last 20 years, the native delta smelt population has taken a ten-fold decline in numbers, due in part by non-native species predation and lack of adequate food supply (USFWS, 2004).
Spatial Representation:	The Sacramento-San Joaquin Delta extends from Chipps Island to include leveed and flooded islands; river channels; sloughs; and tidal marshes. Stations were distributed throughout the Delta for sampling by the Dept. of Water Resources to assess water quality, some since the late 1960's.
Temporal Representation:	Numerous studies since the late 1960s.
Environmental Conditions:	Changes in relative diversity and abundance of native species may also be driven by habitat alteration, flow changes, or hydromodification.
Data Quality Assessment:	Peer Reviewed Journal Article and Reports.

Region 5

Water Segment: Delta Waterways (central portion)

Pollutant: Exotic Species

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.10 of the Listing Policy. Under section 3.10 two lines of evidence are necessary to assess listing status.

Two lines of evidence are available in the administrative record to assess this pollutant. There have been numerous studies since the late 1960's showing sharp declines in phytoplankton biomass and in native species, such as the delta smelt, which has declined ten-fold over the last 20 years. Non-native species are believed to be responsible for this alteration in the delta food web and extirpating native species.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. There are numerous studies since the late 1960's.
2. Baseline data is from data acquired from these earlier studies.
3. Trends were determined using statistical analyses on graphs and tables.
4. Summer chlorophyll a decreased markedly after invasion of the non-native Asian clam. Phytoplankton is a significant source during the spring and summer for many species in the delta.
5. Phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels. Some non-native species compete with zooplankton for food, or alter species composition of the food web. In areas where non-natives are abundant, native fishes are rare or absent.
6. It cannot be determined if the trend in water quality is expected to meet water standards by the next listing cycle.
7. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence	Population/Community Degradation
Beneficial Use:	WA - Warm Freshwater Habitat
Matrix:	Water
Water Quality Objective/ Water Quality Criterion:	All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Water Board. Taken from Region 5 Basin Plan, Page III-8.00, Water Quality Objectives.
Data Used to Assess Water Quality:	Thousands of chlorophyll-a measurements have been made in the Delta since the late 1960s and 55-93% of them, depending on the year, are below 10 ug/L. Growth rates of some primary consumers are closely tied to phytoplankton availability below about 10ug/L. There is a statistically significant downward trend of phytoplankton from 1975-1995 (Jassby et al., 2003). In 1986 the non-native Asian clam invaded Suisun Bay. The Asian clam is a consumer of phytoplankton, changing phytoplankton dynamics in Suisun Bay and the western Delta. Summer chlorophyll decreased markedly after the Asian clam invaded and phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels of the Delta. Some non-native species compete with zooplankton for food, or alter species composition of the food web, affecting native species survival. Recent studies in the central Delta show that introduced fishes dominate (USFWS, 2004. Five-Year Review of Recovery Plan for Delta Smelt. Federal Register 68(148):45270-45271). In areas where non-natives are abundant, native fishes are rare or absent. Over the last 20 years, the native delta smelt population has taken a ten-fold decline in numbers, due in part by non-native species predation and lack of adequate food supply (USFWS, 2005).
Spatial Representation:	The Sacramento-San Joaquin Delta extends from Chipps Island to include leveed and flooded islands; river channels; sloughs; and tidal marshes. Stations were distributed throughout the Delta for sampling by the Dept. of Water Resources to assess water quality, some since the late 1960's.
Temporal Representation:	Numerous studies since the late 1960s.
Environmental Conditions:	Changes in relative diversity and abundance of native species may also be driven by habitat alteration, flow changes, or hydromodification.
Data Quality Assessment:	Peer Reviewed Article and Reports.

Region 5

Water Segment: Delta Waterways (eastern portion)

Pollutant: Exotic Species

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.10 of the Listing Policy. Under section 3.10 two lines of evidence are necessary to assess listing status.

Two lines of evidence are available in the administrative record to assess this pollutant. There have been numerous studies since the late 1960's showing sharp declines in phytoplankton biomass and in native species, such as the delta smelt, which has declined ten-fold over the last 20 years. Non-native species are believed to be responsible for this alteration in the delta food web and extirpating native species.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. There are numerous studies since the late 1960's.
2. Baseline data is from data acquired from these earlier studies.
3. Trends were determined using statistical analyses on graphs and tables.
4. Summer chlorophyll a decreased markedly after invasion of the non-native Asian clam. Phytoplankton is a significant source during the spring and summer for many species in the delta.
5. Phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels. Some non-native species compete with zooplankton for food, or alter species composition of the food web. In areas where non-natives are abundant, native fishes are rare or absent.
6. It cannot be determined if the trend in water quality is expected to meet water standards by the next listing cycle.
7. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence	Population/Community Degradation
Beneficial Use:	WA - Warm Freshwater Habitat
Matrix:	Water
Water Quality Objective/ Water Quality Criterion:	All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Water Board. Taken from Region 5 Basin Plan, Page III-8.00, Water Quality Objectives.
Data Used to Assess Water Quality:	Thousands of chlorophyll-a measurements have been made in the Delta since the late 1960s and 55-93% of them, depending on the year, are below 10 ug/L. Growth rates of some primary consumers are closely tied to phytoplankton availability below about 10ug/L. There is a statistically significant downward trend of phytoplankton from 1975-1995 (Jassby et al., 2003). In 1986 the non-native Asian clam invaded Suisun Bay. The Asian clam is a consumer of phytoplankton, changing phytoplankton dynamics in Suisun Bay and the western Delta. Summer chlorophyll decreased markedly after the Asian clam invaded and phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels of the Delta. Some non-native species compete with zooplankton for food, or alter species composition of the food web, affecting native species survival. Recent studies in the central Delta show that introduced fishes dominate (USFWS, 2004. Five-Year Review of Recovery Plan for Delta Smelt. Federal Register 68(148):45270-45271). In areas where non-natives are abundant, native fishes are rare or absent. Over the last 20 years, the native delta smelt population has taken a ten-fold decline in numbers, due in part by non-native species predation and lack of adequate food supply (USFWS, 2005.
Spatial Representation:	The Sacramento-San Joaquin Delta extends from Chipps Island to include leveed and flooded islands; river channels; sloughs; and tidal marshes. Stations were distributed throughout the Delta for sampling by the Dept. of Water Resources to assess water quality, some since the late 1960's.
Temporal Representation:	Numerous studies since the late 1960s.
Environmental Conditions:	Changes in relative diversity and abundance of native species may also be driven by habitat alteration, flow changes, or hydromodification.
Data Quality Assessment:	Peer Reviewed Journal Article and Reports.

Region 5

Water Segment: Delta Waterways (export area)

Pollutant: Exotic Species

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.10 of the Listing Policy. Under section 3.10 two lines of evidence are necessary to assess listing status.

Two lines of evidence are available in the administrative record to assess this pollutant. There have been numerous studies since the late 1960's showing sharp declines in phytoplankton biomass and in native species, such as the delta smelt, which has declined ten-fold over the last 20 years. Non-native species are believed to be responsible for this alteration in the delta food web and extirpating native species.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. There are numerous studies since the late 1960's.
2. Baseline data is from data acquired from these earlier studies.
3. Trends were determined using statistical analyses on graphs and tables.
4. Summer chlorophyll a decreased markedly after invasion of the non-native Asian clam. Phytoplankton is a significant source during the spring and summer for many species in the delta.
5. Phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels. Some non-native species compete with zooplankton for food, or alter species composition of the food web. In areas where non-natives are abundant, native fishes are rare or absent.
6. It cannot be determined if the trend in water quality is expected to meet water standards by the next listing cycle.
7. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence	Population/Community Degradation
Beneficial Use:	WA - Warm Freshwater Habitat
Matrix:	Water
Water Quality Objective/ Water Quality Criterion:	All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Water Board. Taken from Region 5 Basin Plan, Page III-8.00, Water Quality Objectives.
Data Used to Assess Water Quality:	Thousands of chlorophyll-a measurements have been made in the Delta since the late 1960s and 55-93% of them, depending on the year, are below 10 ug/L. Growth rates of some primary consumers are closely tied to phytoplankton availability below about 10ug/L. There is a statistically significant downward trend of phytoplankton from 1975-1995 (Jassby et al., 2003). In 1986 the non-native Asian clam invaded Suisun Bay. The Asian clam is a consumer of phytoplankton, changing phytoplankton dynamics in Suisun Bay and the western Delta. Summer chlorophyll decreased markedly after the Asian clam invaded and phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels of the Delta. Some non-native species compete with zooplankton for food, or alter species composition of the food web, affecting native species survival. Recent studies in the central Delta show that introduced fishes dominate (USFWS, 2004. Five-Year Review of Recovery Plan for Delta Smelt. Federal Register 68(148):45270-45271). In areas where non-natives are abundant, native fishes are rare or absent. Over the last 20 years, the native delta smelt population has taken a ten-fold decline in numbers, due in part by non-native species predation and lack of adequate food supply (USFWS, 2005.)
Spatial Representation:	The Sacramento-San Joaquin Delta extends from Chipps Island to include leveed and flooded islands; river channels; sloughs; and tidal marshes. Stations were distributed throughout the Delta for sampling by the Dept. of Water Resources to assess water quality, some since the late 1960's.
Temporal Representation:	Numerous studies since the late 1960s.
Environmental Conditions:	Changes in relative diversity and abundance of native species may also be driven by habitat alteration, flow changes, or hydromodification.
Data Quality Assessment:	Peer Reviewed Journal Article and Reports.

Region 5

Water Segment: Delta Waterways (northern portion)

Pollutant: DDT

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.5 of the Listing Policy. One line of evidence is available in the administrative record to assess this pollutant.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Four of the 6 samples exceeded the OEHHA Screening Value and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Tissue

Beneficial Use: CM - Commercial and Sport Fishing (CA)

Matrix: Tissue

Water Quality Objective/ Water Quality Criterion: Central Valley RWQCB Basin Plan: All waters shall be maintained free of toxic substances in concentrations that are toxic to, or produce detrimental physiological responses in human, plant, animal, or aquatic life.

Evaluation Guideline:	100 ng/g - OEHHA Screening Value (Brodberg & Pollock, 1999).
Data Used to Assess Water Quality:	Four out of 6 samples exceeded. A total of 3 filet composite samples of white catfish, one filet composite of smallmouth bass, and individual filet samples of channel catfish and largemouth bass were collected. White catfish were collected in 1992-93 and 1998. Channel catfish were collected in 1993. Largemouth bass were collected in 1998 and smallmouth bass in 2001. The guideline was exceeded in all catfish samples. Bass did not exceed the guideline (TSMP, 2002).
Spatial Representation:	One station near Hood located in the river stretch from Clarksburg to Courtland along the Sacramento/Yolo County line.
Temporal Representation:	Samples were collected annually 1992-93, 1998, 2001.
Data Quality Assessment:	Toxic Substances Monitoring Program 1992-93 Data Report. Environmental Chemistry Quality Assurance and Data Report for the Toxic Substances Monitoring Program,1996-2000. Department of Fish and Game. Environmental Chemistry Quality Assurance and Data Report for the Toxic Substances Monitoring Program, 2001-2002. Department of Fish and Game.

Region 5

Water Segment: Delta Waterways (northern portion)

Pollutant: Exotic Species

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.10 of the Listing Policy. Under section 3.10 two lines of evidence are necessary to assess listing status.

Two lines of evidence are available in the administrative record to assess this pollutant. There have been numerous studies since the late 1960's showing sharp declines in phytoplankton biomass and in native species, such as the delta smelt, which has declined ten-fold over the last 20 years. Non-native species are believed to be responsible for this alteration in the delta food web and extirpating native species.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. There are numerous studies since the late 1960's.
2. Baseline data is from data acquired from these earlier studies.
3. Trends were determined using statistical analyses on graphs and tables.
4. Summer chlorophyll a decreased markedly after invasion of the non-native Asian clam. Phytoplankton is a significant source during the spring and summer for many species in the delta.
5. Phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels. Some non-native species compete with zooplankton for food, or alter species composition of the food web. In areas where non-natives are abundant, native fishes are rare or absent.
6. It cannot be determined if the trend in water quality is expected to meet water standards by the next listing cycle.
7. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence	Population/Community Degradation
Beneficial Use:	WA - Warm Freshwater Habitat
Matrix:	Water
Water Quality Objective/ Water Quality Criterion:	All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Water Board. Taken from Region 5 Basin Plan, Page III-8.00, Water Quality Objectives.
Data Used to Assess Water Quality:	Thousands of chlorophyll-a measurements have been made in the Delta since the late 1960s and 55-93% of them, depending on the year, are below 10 ug/L. Growth rates of some primary consumers are closely tied to phytoplankton availability below about 10ug/L. There is a statistically significant downward trend of phytoplankton from 1975-1995 (Jassby et al., 2003). In 1986 the non-native Asian clam invaded Suisun Bay. The Asian clam is a consumer of phytoplankton, changing phytoplankton dynamics in Suisun Bay and the western Delta. Summer chlorophyll decreased markedly after the Asian clam invaded and phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels of the Delta. Some non-native species compete with zooplankton for food, or alter species composition of the food web, affecting native species survival. Recent studies in the central Delta show that introduced fishes dominate (USFWS, 2004. Five-Year Review of Recovery Plan for Delta Smelt. Federal Register 68(148):45270-45271). In areas where non-natives are abundant, native fishes are rare or absent. Over the last 20 years, the native delta smelt population has taken a ten-fold decline in numbers, due in part by non-native species predation and lack of adequate food supply (USFWS, 2005).
Spatial Representation:	The Sacramento-San Joaquin Delta extends from Chipps Island to include leveed and flooded islands; river channels; sloughs; and tidal marshes. Stations were distributed throughout the Delta for sampling by the Dept. of Water Resources to assess water quality, some since the late 1960's.
Temporal Representation:	Numerous studies since the late 1960s.
Environmental Conditions:	Changes in relative diversity and abundance of native species may also be driven by habitat alteration, flow changes, or hydromodification.
Data Quality Assessment:	Peer Reviewed Journal Article and Reports.

Region 5

Water Segment: Delta Waterways (northern portion)

Pollutant: Mercury

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.5 of the Listing Policy. One line of evidence is available in the administrative record to assess this pollutant.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Nine of the 16 samples exceeded the OEHHA Screening Value and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Tissue

Beneficial Use: CM - Commercial and Sport Fishing (CA)

Matrix: Tissue

Water Quality Objective/ Water Quality Criterion: Central Valley RWQCB Basin Plan: All waters shall be maintained free of toxic substances in concentrations that are toxic to, or produce detrimental physiological responses in human, plant, animal, or aquatic life.

Evaluation Guideline:	0.3 ug/g - OEHHA Screening Value (Brodberg & Pollock, 1999).
Data Used to Assess Water Quality:	Nine out of 16 samples exceeded. A total of 4 filet composite and 12 individual samples of the following fish were collected: 12 white catfish, and one each largemouth bass, smallmouth bass, channel catfish, chinook salmon. White catfish were collected in 1992-93 and 1998. Channel catfish were collected in 1993. Largemouth bass were collected in 1998 and smallmouth bass in 2001. Chinook salmon were collected in 2002. Seven white catfish samples collected in 1992 and 1998 exceeded the guideline. The largemouth bass and smallmouth bass also exceed the guideline (TSMP, 2002).
Spatial Representation:	Two stations were sampled: in the river stretch from Clarksburg to Courtland along the Sacramento/Yolo County line (Hood), about 3 miles downstream of Garcia Bend launch ramp (RM44).
Temporal Representation:	Samples were collected annually 1992-93, 1996-99, 2001-02.
Data Quality Assessment:	Toxic Substances Monitoring Program 1992-93 Data Report. Environmental Chemistry Quality Assurance and Data Report for the Toxic Substances Monitoring Program,1996-2000. Department of Fish and Game. Environmental Chemistry Quality Assurance and Data Report for the Toxic Substances Monitoring Program, 2001-2002. Department of Fish and Game.

Region 5

Water Segment: Delta Waterways (northern portion)

Pollutant: Polychlorinated biphenyls

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.5 of the Listing Policy. One line of evidence is available in the administrative record to assess this pollutant.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Two of the 6 samples exceeded the OEHHA Screening Value and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Tissue

Beneficial Use: CM - Commercial and Sport Fishing (CA)

Matrix: Tissue

Water Quality Objective/ Water Quality Criterion: Central Valley RWQCB Basin Plan: All waters shall be maintained free of toxic substances in concentrations that are toxic to, or produce detrimental physiological responses in human, plant, animal, or aquatic life.

Evaluation Guideline:	20 ng/g - OEHHA Screening Value (Brodberg & Pollock, 1999).
Data Used to Assess Water Quality:	Two out of 6 samples exceeded. A total of 3 filet composite samples of white catfish, one filet composite of smallmouth bass, and individual filet samples of channel catfish and largemouth bass were collected. White catfish were collected in 1992-93 and 1998. Channel catfish were collected in 1993. Largemouth bass were collected in 1998 and smallmouth bass in 2001. The guideline was exceeded in 1992 and 1998 catfish samples (TSMP, 2002).
Spatial Representation:	One station near Hood located in the river stretch from Clarksburg to Courtland along the Sacramento/Yolo County line.
Temporal Representation:	Samples were collected annually 1992-93, 1998, and 2001.
Data Quality Assessment:	Toxic Substances Monitoring Program 1992-93 Data Report. Environmental Chemistry Quality Assurance and Data Report for the Toxic Substances Monitoring Program,1996-2000. Department of Fish and Game. Environmental Chemistry Quality Assurance and Data Report for the Toxic Substances Monitoring Program, 2001-2002. Department of Fish and Game.

Region 5

Water Segment: Delta Waterways (northwestern portion)

Pollutant: Exotic Species

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.10 of the Listing Policy. Under section 3.10 two lines of evidence are necessary to assess listing status.

Two lines of evidence are available in the administrative record to assess this pollutant. There have been numerous studies since the late 1960's showing sharp declines in phytoplankton biomass and in native species, such as the delta smelt, which has declined ten-fold over the last 20 years. Non-native species are believed to be responsible for this alteration in the delta food web and extirpating native species.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. There are numerous studies since the late 1960's.
2. Baseline data is from data acquired from these earlier studies.
3. Trends were determined using statistical analyses on graphs and tables.
4. Summer chlorophyll a decreased markedly after invasion of the non-native Asian clam. Phytoplankton is a significant source during the spring and summer for many species in the delta.
5. Phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels. Some non-native species compete with zooplankton for food, or alter species composition of the food web. In areas where non-natives are abundant, native fishes are rare or absent.
6. It cannot be determined if the trend in water quality is expected to meet water standards by the next listing cycle.
7. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence	Population/Community Degradation
Beneficial Use:	WA - Warm Freshwater Habitat
Matrix:	Water
Water Quality Objective/ Water Quality Criterion:	All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Water Board. Taken from Region 5 Basin Plan, Page III-8.00, Water Quality Objectives.
Data Used to Assess Water Quality:	Thousands of chlorophyll-a measurements have been made in the Delta since the late 1960s and 55-93% of them, depending on the year, are below 10 ug/L. Growth rates of some primary consumers are closely tied to phytoplankton availability below about 10ug/L. There is a statistically significant downward trend of phytoplankton from 1975-1995 (Jassby et al., 2003). In 1986 the non-native Asian clam invaded Suisun Bay. The Asian clam is a consumer of phytoplankton, changing phytoplankton dynamics in Suisun Bay and the western Delta. Summer chlorophyll decreased markedly after the Asian clam invaded and phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels of the Delta. Some non-native species compete with zooplankton for food, or alter species composition of the food web, affecting native species survival. Recent studies in the central Delta show that introduced fishes dominate (USFWS, 2004. Five-Year Review of Recovery Plan for Delta Smelt. Federal Register 68(148):45270-45271). In areas where non-natives are abundant, native fishes are rare or absent. Over the last 20 years, the native delta smelt population has taken a ten-fold decline in numbers, due in part by non-native species predation and lack of adequate food supply (USFWS, 2005).
Spatial Representation:	The Sacramento-San Joaquin Delta extends from Chipps Island to include leveed and flooded islands; river channels; sloughs; and tidal marshes. Stations were distributed throughout the Delta for sampling by the Dept. of Water Resources to assess water quality, some since the late 1960's.
Temporal Representation:	Numerous studies since the late 1960s.
Environmental Conditions:	Changes in relative diversity and abundance of native species may also be driven by habitat alteration, flow changes, or hydromodification.
Data Quality Assessment:	Peer Reviewed Journal Article and Reports.

Region 5

Water Segment: Delta Waterways (southern portion)

Pollutant: DDT

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.5 of the Listing Policy. One line of evidence is available in the administrative record to assess this pollutant.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Two of the 2 samples exceeded the OEHHA Screening Value and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Tissue

Beneficial Use: CM - Commercial and Sport Fishing (CA)

Matrix: Tissue

Water Quality Objective/ Water Quality Criterion: Central Valley RWQCB Basin Plan: All waters shall be maintained free of toxic substances in concentrations that are toxic to, or produce detrimental physiological responses in human, plant, animal, or aquatic life.

Evaluation Guideline:	100 ng/g - OEHHA Screening Value (Brodberg & Pollock, 1999).
Data Used to Assess Water Quality:	Two out of 2 samples exceeded. A total of 2 filet composite samples of largemouth bass were collected. Largemouth bass were collected in 1992-93. The guideline was exceeded in both samples of largemouth bass (TSMP, 2002).
Spatial Representation:	One station along the San Joaquin River 1 1/2 miles upstream from the Mossdale launch ramp (Mossdale) was sampled.
Temporal Representation:	Samples were collected annually 1992-93.
Data Quality Assessment:	Toxic Substances Monitoring Program 1992-93 Data Report.

Region 5

Water Segment: Delta Waterways (southern portion)

Pollutant: Exotic Species

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.10 of the Listing Policy. Under section 3.10 two lines of evidence are necessary to assess listing status.

Two lines of evidence are available in the administrative record to assess this pollutant. There have been numerous studies since the late 1960's showing sharp declines in phytoplankton biomass and in native species, such as the delta smelt, which has declined ten-fold over the last 20 years. Non-native species are believed to be responsible for this alteration in the delta food web and extirpating native species.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. There are numerous studies since the late 1960's.
2. Baseline data is from data acquired from these earlier studies.
3. Trends were determined using statistical analyses on graphs and tables.
4. Summer chlorophyll a decreased markedly after invasion of the non-native Asian clam. Phytoplankton is a significant source during the spring and summer for many species in the delta.
5. Phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels. Some non-native species compete with zooplankton for food, or alter species composition of the food web. In areas where non-natives are abundant, native fishes are rare or absent.
6. It cannot be determined if the trend in water quality is expected to meet water standards by the next listing cycle.
7. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence	Population/Community Degradation
Beneficial Use:	WA - Warm Freshwater Habitat
Matrix:	Water
Water Quality Objective/ Water Quality Criterion:	All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Water Board. Taken from Region 5 Basin Plan, Page III-8.00, Water Quality Objectives.
Data Used to Assess Water Quality:	Thousands of chlorophyll-a measurements have been made in the Delta since the late 1960s and 55-93% of them, depending on the year, are below 10 ug/L. Growth rates of some primary consumers are closely tied to phytoplankton availability below about 10ug/L. There is a statistically significant downward trend of phytoplankton from 1975-1995 (Jassby et al., 2003). In 1986 the non-native Asian clam invaded Suisun Bay. The Asian clam is a consumer of phytoplankton, changing phytoplankton dynamics in Suisun Bay and the western Delta. Summer chlorophyll decreased markedly after the Asian clam invaded and phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels of the Delta. Some non-native species compete with zooplankton for food, or alter species composition of the food web, affecting native species survival. Recent studies in the central Delta show that introduced fishes dominate (USFWS, 2004. Five-Year Review of Recovery Plan for Delta Smelt. Federal Register 68(148):45270-45271). In areas where non-natives are abundant, native fishes are rare or absent. Over the last 20 years, the native delta smelt population has taken a ten-fold decline in numbers, due in part by non-native species predation and lack of adequate food supply (USFWS, 2005).
Spatial Representation:	The Sacramento-San Joaquin Delta extends from Chipps Island to include leveed and flooded islands; river channels; sloughs; and tidal marshes. Stations were distributed throughout the Delta for sampling by the Dept. of Water Resources to assess water quality, some since the late 1960's.
Temporal Representation:	Numerous studies since the late 1960s.
Environmental Conditions:	Changes in relative diversity and abundance of native species may also be driven by habitat alteration, flow changes, or hydromodification.
Data Quality Assessment:	Peer Reviewed Journal Article and Reports.

Region 5

Water Segment: Delta Waterways (western portion)

Pollutant: Exotic Species

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.10 of the Listing Policy. Under section 3.10 two lines of evidence are necessary to assess listing status.

Two lines of evidence are available in the administrative record to assess this pollutant. There have been numerous studies since the late 1960's showing sharp declines in phytoplankton biomass and in native species, such as the delta smelt, which has declined ten-fold over the last 20 years. Non-native species are believed to be responsible for this alteration in the delta food web and extirpating native species.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. There are numerous studies since the late 1960's.
2. Baseline data is from data acquired from these earlier studies.
3. Trends were determined using statistical analyses on graphs and tables.
4. Summer chlorophyll a decreased markedly after invasion of the non-native Asian clam. Phytoplankton is a significant source during the spring and summer for many species in the delta.
5. Phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels. Some non-native species compete with zooplankton for food, or alter species composition of the food web. In areas where non-natives are abundant, native fishes are rare or absent.
6. It cannot be determined if the trend in water quality is expected to meet water standards by the next listing cycle.
7. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence	Population/Community Degradation
Beneficial Use:	WA - Warm Freshwater Habitat
Matrix:	Water
Water Quality Objective/ Water Quality Criterion:	All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Water Board. Taken from Region 5 Basin Plan, Page III-8.00, Water Quality Objectives.
Data Used to Assess Water Quality:	Thousands of chlorophyll-a measurements have been made in the Delta since the late 1960's and 55-93% of them, depending on the year, are below 10 ug/L. Growth rates of some primary consumers are closely tied to phytoplankton availability below about 10ug/L. There is statistically significant downward trend of phytoplankton from 1975-1995 (Jassby et al., 2003). In 1986 the non-native Asian clam invaded Suisun Bay. The Asian clam is a consumer of phytoplankton, changing phytoplankton dynamics in Suisun Bay and the western Delta. Summer chlorophyll decreased markedly after the Asian clam invaded and phytoplankton biomass has declined over the past few decades, affecting food biomass availability for higher tropic levels of the Delta. Some non-native species compete with zooplankton for food, or alter species composition of the food web, affecting native species survival. Recent studies in the central Delta show that introduced fishes dominate (USFWS, 2004. Five-Year Review of Recovery Plan for Delta Smelt. Federal Register 68(148):45270-45271). In areas where non-natives are abundant, native fishes are rare or absent. Over the last 20 years, the native delta smelt population has taken a ten-fold decline in numbers, due in part by non-native species predation and lack of adequate food supply (USFWS, 20050.
Spatial Representation:	The Sacramento-San Joaquin Delta extends from Chipps Island to include leveed and flooded islands; river channels; sloughs; and tidal marshes. Stations were distributed throughout the Delta for sampling by the Dept. of Water Resources to assess water quality, some since the late 1960's.
Temporal Representation:	Numerous studies since the late 1960's.
Environmental Conditions:	Changes in relative diversity and abundance of native species may also be driven by habitat alteration, flow changes, or hydromodification.
Data Quality Assessment:	Peer Reviewed Journal Article and Reports.

Region 5

Water Segment: Feather River, Lower (Lake Oroville Dam to Confluence with Sacramento River)

Pollutant: Chlorpyrifos

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.1 of the Listing Policy. Under section 3.1 a single line of evidence is necessary to assess listing status.

Two lines of evidence are available in the administrative record to assess this pollutant. Two samples exceed the water quality objective.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Two of 14 samples exceeded the CDFG 1 hour criteria and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: CO - Cold Freshwater Habitat

Matrix: Water

Water Quality Objective/ Pesticide concentrations shall not exceed those allowable by applicable antidegradation policies (see State Water Resources Control Board Resolution

Water Quality Criterion:	No. 68-16 and 40 CFR section 131.12). No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses.
Evaluation Guideline:	CDFG Hazard Assessment Criteria 25 ng/L 1-hour average.
Data Used to Assess Water Quality:	Seven sites were monitored in the Sacramento River Basin (this data represents the Feather River near Nicolaus/Verona). Sampling frequency for each storm event was one sample/day was taken for 7 days. Two storm events were sampled for the 2004 TMDL project in the Sacramento River Basin. The first storm event (Storm 1) was the period 28 January to 6 February 2004. The second storm event (Storm 2) was the period 15-23 February, 2004. For storm 1 sampling was conducted from 28 January to 3 February. For storm 2 the sampling period began on 16 February and extended until 22 February. Isokinetic, depth integrated water samples were collected at 6-10 equally spaced points across the channel width with a USGS D-77 sampler using the equal-width-increment method (EWI). Samples were collected from a boat at Feather River near Nicolaus/Verona. Fourteen samples were taken; 2 exceeded the CDFG criteria (Calanchini et al., 2004a).
Spatial Representation:	On 2 and 3 February, for sampling at Feather River, a single grab sample was collected from the bank at each site.
Temporal Representation:	The Feather River was sampled on 22 February; these samples were collected with a D77 using the EWI method.
Data Quality Assessment:	Sample quality control was measured through collection of sequential duplicates (n=8), blanks (n=5) and matrix spikes (n=5) (Table 3). The relative percent difference (RPD) between environmental and duplicate sample concentrations of chlorpyrifos ranged from 0-104%. The RPDs between environmental and duplicate sample concentrations of diazinon ranged from 0-40%.

Line of Evidence	Pollutant-Water
Beneficial Use	CO - Cold Freshwater Habitat
Non-Numeric Objective:	No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses. Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by the Environmental Protection Agency or the executive Officer. Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of pesticides in excess of the Maximum Contaminant Levels set forth in California Code of Regulations, Title 22, Division 4, Chapter 15.

Evaluation Guideline:	CDFG Hazard Assessment Criteria - 14 ng/L 4-day average and 25 ng/L 1-hour average
Data Used to Assess Water Quality:	Data was obtained from the USGS Water-Resources Investigations Report 02-410. None of the concentrations from the samples from this site exceeded the CDFG criteria. Some of the concentrations were cited as less than values and as such could not be used in this assessment.
Spatial Representation:	Samples were collected on the Feather River near Nicolaus.
Temporal Representation:	Samples were collected over a 3 year period from 2/2000 to 2/2003. All samples were taken in late January or February.

Region 5

Water Segment: Feather River, North Fork (below Lake Almanor)

Pollutant: Mercury

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.5 of the Listing Policy. Under section 3.5 a single line of evidence is necessary to assess listing status.

Two lines of evidence are available in the administrative record to assess this pollutant. Seven fish tissue samples collected in 2001 exceed the tissue guideline.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Seven of 7 samples exceeded the OEHHA screening value for protection of humans eating fish and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Tissue

Beneficial Use: AG - Agricultural Supply, CM - Commercial and Sport Fishing (CA), CO - Cold Freshwater Habitat, MI - Fish Migration, MU - Municipal & Domestic, NA - Navigation, R1 - Water Contact Recreation, R2 - Non-Contact Recreation, RA - Rare & Endangered Species, SP - Fish Spawning, WA - Warm Freshwater Habitat, WI - Wildlife Habitat

Matrix:	Tissue
Water Quality Objective/ Water Quality Criterion:	None.
Evaluation Guideline:	None.
Data Used to Assess Water Quality:	3 Sacramento suckers, 1 rainbow trout, 1 brown trout, 2 smallmouth bass, and several crayfish were collected from Belden Forebay (upstream of dredge disposal pile). Belden methyl-mercury values in suckers ranged from 53.2-91.1 ppb. The trout values were 53.5 ppb (rainbow) and 69.1 ppb (brown). The bass methyl-mercury values were 111.0 and 55.6 ppb. The crayfish value was 31.5 ppb. No data were available from the North Fork of the Feather River (below the dredge disposal pile).
Spatial Representation:	7 upstream fish samples.
Temporal Representation:	Upstream samples were collected August 14, 2001.
Environmental Conditions:	Unknown. Probably relatively low flows.
Data Quality Assessment:	Extensive QA/QC information included in report. Appears to follow standard laboratory requirements.

Numeric Line of Evidence	Pollutant-Tissue
Beneficial Use:	AG - Agricultural Supply, CM - Commercial and Sport Fishing (CA), CO - Cold Freshwater Habitat, MI - Fish Migration, MU - Municipal & Domestic, NA - Navigation, R1 - Water Contact Recreation, R2 - Non-Contact Recreation, RA - Rare & Endangered Species, SP - Fish Spawning, WA - Warm Freshwater Habitat, WI - Wildlife Habitat
Matrix:	Tissue
Evaluation Guideline:	The OEHHA screening value for protection of humans eating fish is 0.3 ppm for mercury.
Data Used to Assess Water Quality:	Three Sacramento suckers, 1 rainbow trout, 1 brown trout, 2 smallmouth bass, and several crayfish were collected from Belden Forebay (upstream of dredge disposal pile). Belden total mercury values in suckers ranged from 54.7-92.8 ppb. The trout values were 54.5 ppb (rainbow) and 70.6 ppb (brown). The bass total mercury values were 114.0 and 56.7 ppb. The crayfish value was 33.3 ppb.

	No data were available from the North Fork of the Feather River (below the dredge disposal pile) (PG&E, 2002).
Spatial Representation:	Seven upstream fish samples Belden Forebay.
Temporal Representation:	Upstream samples were collected August 14, 2001.
Environmental Conditions:	Unknown. Probably relatively low flows.
Data Quality Assessment:	Extensive QA/QC information included in report. Appears to follow standard laboratory requirements.

Numeric Line of Evidence	Pollutant-Tissue
Beneficial Use:	AG - Agricultural Supply, CM - Commercial and Sport Fishing (CA), CO - Cold Freshwater Habitat, MI - Fish Migration, MU - Municipal & Domestic, NA - Navigation, R1 - Water Contact Recreation, R2 - Non-Contact Recreation, RA - Rare & Endangered Species, SP - Fish Spawning, WA - Warm Freshwater Habitat, WI - Wildlife Habitat
Matrix:	Tissue
Evaluation Guideline:	The OEHHA screening value for protection of humans eating fish is 0.3 ppm for mercury (Brodberg & Pollock, 1999).
Data Used to Assess Water Quality:	Six Sacramento suckers, 1 rainbow trout, 2 Sacramento pike minnow, and 9 smallmouth bass were collected upstream (of Poe Powerhouse). Upstream total mercury values in smallmouth bass ranged from 0.09-0.27 ppm (average = 0.13 ppm). The trout value was 0.07 ppm. The two pike minnow values were 0.33 and 0.18 ppm. Upstream Sacramento sucker values were unavailable. Six Sacramento suckers, 2 rainbow trout, 8 Sacramento pike minnow, 9 smallmouth bass, and 9 spotted bass were collected downstream (of Poe Powerhouse). Downstream total mercury values in smallmouth bass ranged from 0.11-0.32 ppm (average = 0.17 ppm). Mercury values in spotted bass ranged from 0.19-0.65 ppm (average = 0.33 ppm). Mercury values in pike minnows ranged from 0.22-0.98 ppm (average = 0.57 ppm). The two trout values were 0.03 and 0.04 ppm. Downstream Sacramento sucker values were unavailable (PG&E, 2003a).
Spatial Representation:	Eighteen upstream (of Poe Powerhouse) and 10 downstream fish tissue samples taken.
Temporal Representation:	Upstream data collected 11/21/2002 and 6/16/2003 as part of overall Poe Project (Poe Reservoir and Big Bend Dam reservoir below Poe Powerhouse). This data covers both winter (wet) and summer (dry) periods.

	Downstream data collected 12/4/2002, 12/5/2002, and 6/19/2003.
Environmental Conditions:	Data from both relatively low and relatively high flow periods are included.
Data Quality Assessment:	Unknown, but PG&E was responsible.

Region 5

Water Segment: Feather River, North Fork (below Lake Almanor)

Pollutant: Temperature, water

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.2 of the Listing Policy. Under section 3.2 a single line of evidence is necessary to assess listing status.

One line of evidence is available in the administrative record to assess this pollutant. A large number of annual maximum temperature values exceeded the 21.0°C criteria.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. The total number of annual maximum temperatures was 41. Of this total, there were 35 values that exceeded the 21.0°C steelhead criteria and this exceeds the allowable frequency listed in Table 3.2 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: CO - Cold Freshwater Habitat, WA - Warm Freshwater Habitat

Matrix: Water

Water Quality Objective/ "The natural receiving water temperature of intrastate waters shall not be altered

Water Quality Criterion:	unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses." "At no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature. Temperature changes due to controllable factors shall be limited for the water bodies specified as described in Table III-4. To the extent of any conflict with the above, the more stringent objective applies."
Evaluation Guideline:	The guideline used was from Sullivan et al (2000). Published Temperature Thresholds-Peer Reviewed Literature which includes reviewed sub-lethal and acute temperature thresholds from a wide range of studies, incorporating information from laboratory-based research, field observations, and risk assessment approaches. This report calculated the Annual Maximum (instantaneous maximum observed during the summer) upper threshold criterion for steelhead trout as 21.0°C. The risk assessment approach used by Sullivan et al (2000) suggests that an upper threshold for the Annual Maximum of 21.0°C for steelhead will reduce average growth 10% from optimum.
Data Used to Assess Water Quality:	Temperature measurements were taken over the span of 4 years (1999, 2000, 2002 and 2003) from May or June to September at 25 different monitoring stations along the North Fork of the Feather River. For each station, temperature monitoring was continuous and taken at 5 or 15 minute intervals, depending on the station and year monitored, using digital thermographs. Based on the data provided, all 10 monitoring stations exceeded the 21.0°C annual maximum criterion for steelhead either once or more than once during the sampling period from 1999 to 2003. For each monitoring year, each station had a set of 4 to 5 hourly maximum temperature values (except for those months when sampling did not occur), a value for each month. Based on each set of values the annual maximum temperature for each year was determined. There was a total of 41 annual maximum temperatures. Of this total, there were 35 annual maximum temperature values that exceeded the 21.0°C criteria (PG&E, 2003c); (PG&E, 2003a).
Spatial Representation:	There were 25 sampling stations spanning the length of the North Fork of the Feather River. Ten of these stations were for years 1999, 2000 and 2003. And 15 were for 2002.
Temporal Representation:	Samples were taken during 1999, 2000, 2002 and 2003 from either May or June to September. For each station, temperature monitoring was continuous and taken at 5 or 15 minute intervals, depending on the station and year monitored.
Data Quality Assessment:	High Quality - automatic data loggers, several years/water year types. Quality assurance well documented.

Region 5

Water Segment:	Grasslands Marshes
Pollutant:	Selenium
Decision:	List
Weight of Evidence:	This pollutant is being considered for listing under section 2.2 of the Listing Policy. Under this section of the Policy, a minimum of one line of evidence is needed to assess listing status. One line of evidence is available in the administrative record to assess this pollutant. Based on the applicable factor, a TMDL has been developed and approved by USEPA and an approved implementation plan is expected to result in attainment of the standard. This water segment-pollutant combination was moved off the section 303(d) list during the 2002 listing cycle. Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination in the Water Quality Limited Segments Being Addressed portion of the section 303(d) list.
SWRCB Staff Recommendation:	After review of the available data and information for this recommendation, SWRCB staff conclude that the water body should be placed in the Water Quality Limited Segments Being Addressed category of the section 303(d) list because a TMDL has been approved by USEPA and an implementation plan has been approved.

Lines of Evidence:

Line of Evidence	Remedial Program in Place
Beneficial Use	WA - Warm Freshwater Habitat
Information Used to Assess Water Quality:	TMDL completed in 2000.

Region 5

Water Segment: Grayson Drain (at outfall)

Pollutant: Sediment Bioassays -- Chronic Toxicity -- Freshwater

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.6 of the Listing Policy. Under section 3.6 a single line of evidence is necessary to assess listing status.

One line of evidence is available in the administrative record to assess this pollutant. All of the measurements exhibited toxicity.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Three of 3 samples exceeded the narrative water quality objective and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Toxicity

Beneficial Use: CM - Commercial and Sport Fishing (CA), WA - Warm Freshwater Habitat

Matrix: Sediment

Water Quality Objective/ Waters are to remain free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal or aquatic life.

Water Quality Criterion:	Toxicity may be caused by a single substance or the interactive effect of multiple substances (Region 5 Basin Plan, September, 1998)
Data Used to Assess Water Quality:	Three out of three samples displayed statistically significant toxicity in the survival endpoint when compared to the negative control based on a statistical test with alpha of less than 5%. All samples were tested using the test organism Hyalella azteca, either as 10 or 4 day tests (SWAMP, 2004).
Spatial Representation:	Samples were collected at one site, Grayson Drain at Grayson Road.
Temporal Representation:	Samples were collected between September 2002 through July 2003 (Sampling dates: September 19, 2002; April 11, 2003; July 15, 2003).
Environmental Conditions:	San Joaquin River Sub-Basin; located in Stanislaus County
Data Quality Assessment:	SWAMP QAPP.

Region 5

Water Segment: Ingram Creek (from confluence with Hospital Creek to Hwy 33 crossing)

Pollutant: Pyrethroid

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.6 of the Listing Policy. Under section 3.6 a single line of evidence is necessary to assess listing status.

Two lines of evidence is available in the administrative record to assess this pollutant. Several samples exhibit toxicity. Toxicity Identification Evaluations indicate the likely cause of the toxicity is pyrethroid pesticides.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. All samples exhibit toxicity and TIEs indicate pyrethroid pesticides are the likely cause.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Toxicity

Beneficial Use: MI - Fish Migration, SP - Fish Spawning, WA - Warm Freshwater Habitat, WI - Wildlife Habitat

Matrix: Sediment

Water Quality Objective/ Water Quality Criterion:	Waters are to remain free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal or aquatic life. Toxicity may be caused by a single substance or the interactive effect of multiple substances (Region 5 Basin Plan, September, 1998)
Data Used to Assess Water Quality:	Five out of five samples displayed statistically significant toxicity in the survival endpoint when compared to the negative control based on a statistical test with alpha of less than 5%. All samples were tested using the test organism Hyalella azteca test, either as 10 or 4 day tests (SWAMP, 2004).
Spatial Representation:	Samples were collected at one site, Ingram Creek at River Road.
Temporal Representation:	Samples were collected between September 2002 through September 2004 (Sampling dates: September 24, 2002; April 11, 2003; July 15, 2003; November 13, 2003; September 13, 2004).
Environmental Conditions:	San Joaquin River Sub-Basin; located in Stanislaus County.
Data Quality Assessment:	SWAMP QAPP.

Line of Evidence	Pollutant-Water
Beneficial Use	MI - Fish Migration, SP - Fish Spawning, WA - Warm Freshwater Habitat, WI - Wildlife Habitat
Non-Numeric Objective:	Waters are to remain free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal or aquatic life. Toxicity may be caused by a single substance or the interactive effect of multiple substances (Region 5 Basin Plan, September, 1998)
Data Used to Assess Water Quality:	Toxicity Identification Evaluations (TIEs) were conducted on samples collected on September 13, 2004. Results suggests the cause of toxicity to be pyrethroid pesticide(s), although there may also be additional factors contributing to the toxicity (UC Davis, 2002).

Region 5

Water Segment: Ingram Creek (from confluence with San Joaquin River to confluence with Hospital Creek)

Pollutant: Pyrethroid

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.6 of the Listing Policy. Under section 3.6 a single line of evidence is necessary to assess listing status.

Two lines of evidence is available in the administrative record to assess this pollutant. Several samples exhibit toxicity. Toxicity Identification Evaluations indicate the likely cause of the toxicity is pyrethroid pesticides.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. All samples exhibit toxicity and TIEs indicate pyrethroid pesticides are the likely cause.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Toxicity

Beneficial Use: MI - Fish Migration, SP - Fish Spawning, WA - Warm Freshwater Habitat, WI - Wildlife Habitat

Matrix: Sediment

Water Quality Objective/ Water Quality Criterion:	Waters are to remain free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal or aquatic life. Toxicity may be caused by a single substance or the interactive effect of multiple substances (Region 5 Basin Plan, September, 1998)
Data Used to Assess Water Quality:	Five out of five samples displayed statistically significant toxicity in the survival endpoint when compared to the negative control based on a statistical test with alpha of less than 5%. All samples were tested using the test organism Hyalella azteca test, either as 10 or 4 day tests (SWAMP, 2004).
Spatial Representation:	Samples were collected at one site, Ingram Creek at River Road.
Temporal Representation:	Samples were collected between September 2002 through September 2004 (Sampling dates: September 24, 2002; April 11, 2003; July 15, 2003; November 13, 2003; September 13, 2004).
Environmental Conditions:	San Joaquin River Sub-Basin; located in Stanislaus County.
Data Quality Assessment:	SWAMP QAPP.

Line of Evidence	Pollutant-Water
Beneficial Use	MI - Fish Migration, SP - Fish Spawning, WA - Warm Freshwater Habitat, WI - Wildlife Habitat
Non-Numeric Objective:	Waters are to remain free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal or aquatic life. Toxicity may be caused by a single substance or the interactive effect of multiple substances (Region 5 Basin Plan, September, 1998)
Data Used to Assess Water Quality:	Toxicity Identification Evaluations (TIEs) were conducted on samples collected on September 13, 2004. Results suggests the cause of toxicity to be pyrethroid pesticide(s), although there may also be additional factors contributing to the toxicity (UC Davis, 2002).

Region 5

Water Segment: Kaweah Lake

Pollutant: Mercury

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.5 of the Listing Policy. One line of evidence is available in the administrative record to assess this pollutant.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Three of the 3 samples exceeded the OEHHA Screening Value and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Tissue

Beneficial Use: CM - Commercial and Sport Fishing (CA)

Matrix: Tissue

Water Quality Objective/ Water Quality Criterion: Central Valley RWQCB Basin Plan: All waters shall be maintained free of toxic substances in concentrations that are toxic to, or produce detrimental physiological responses in human, plant, animal, or aquatic life.

Evaluation Guideline:	0.3 ug/g (OEHHA Screening Value) (Brodberg & Pollock, 1999).
Data Used to Assess Water Quality:	Three out of 3 samples exceeded. Three filet composite samples of largemouth bass were collected. Bass were collected in 1993, 2001, and 2003. All samples exceeded the guideline (TSMP, 2002).
Spatial Representation:	One station located in the center of this lake.
Temporal Representation:	Samples were collected 9/1/93, 11/6/01, and 6/17/03.
Data Quality Assessment:	Toxic Substances Monitoring Program 1992-93 Data Report. Environmental Chemistry Quality Assurance and Data Report for the Toxic Substances Monitoring Program, 2001-2002. Department of Fish and Game.

Region 5

Water Segment: Lower Bear River Reservoir

Pollutant: Copper

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.1 of the Listing Policy. Under section 3.1 a single line of evidence is necessary to assess listing status.

One lines of evidence are available in the administrative record to assess this pollutant. Based on section 3.1 the site exceeds the water quality criterion on 3 occasions.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Three of 7 samples exceeded the CTR criterion and this exceed the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: CO - Cold Freshwater Habitat, WA - Warm Freshwater Habitat

Matrix: Water

Water Quality Objective/ Water Quality Criterion:	Hardness based criteria from USEPA (CTR) for freshwater (USEPA, 2000).
Data Used to Assess Water Quality:	Dissolved copper and hardness values were measured at the top, middle and bottom of the Lower Bear River Reservoir on each of 7 dates. The hardness and dissolved copper values were averaged for each date and compared the daily average hardness-corrected copper criteria to the daily average copper concentrations (excluding one anomalously high copper concentration flagged as possibly contaminated). Based on this analysis, 3 of 7 average dissolved copper concentrations exceeded their respective average hardness-corrected copper criterion. [Preliminary Supplemental Copper Monitoring Results March - December 2002] (PG&E, 2003b).
Spatial Representation:	Lower Bear River Reservoir sample collected near the dam from the epilimnion (Middle). Latitude (38° 32.365 N); Longitude (120° 15.162 W).
Temporal Representation:	Samples taken monthly from 5/16/2002 to 10/23/2002.
Data Quality Assessment:	Well documented QA/QC including report on certified analytical reports and chain-of-custody documentation.

Region 5

Water Segment: Main Drainage Canal

Pollutant: Diazinon

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.1 of the Listing Policy. Under section 3.1 a single line of evidence is necessary to assess listing status.

One line of evidence is available in the administrative record to assess this pollutant. A large number of samples exceed the water quality objective even though forty of the ELISA samples could not be used because the quality of the data was questionable.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Fifty of 98 samples exceeded the CDFG Hazard Assessment Criteria and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: CO - Cold Freshwater Habitat

Matrix: Water

Water Quality Objective/ Water Quality Criterion:	No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses. Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by the Environmental Protection Agency or the executive Officer. Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of pesticides in excess of the Maximum Contaminant Levels set forth in California Code of Regulations, Title 22, Division 4, Chapter 15. Pesticide concentrations shall not exceed those allowable by applicable antidegradation policies (see State Water Resources Control Board Resolution No. 68-16 and 40 C.F.R. Section 131.12). Pesticide concentrations shall not exceed the lowest levels technically and economically achievable. A trend in declining water quality has not been established per the Policy in section 3.1.10.
Evaluation Guideline:	CDFG Hazard Assessment Criteria - acute value: 0.10 ug/L, chronic value: 0.16 ug/L (Siepmann & Finlayson, 2002).
Data Used to Assess Water Quality:	Samples were analyzed using ELISA, GC/MS Arvada, CO. One hundred fifty-six total samples were collected. Forty-six of the ELISA samples could not be used because the quality of the data was questionable. Fifty of 98 samples exceeded the guideline (Dileanis et al., 2002), (Dileanis, 2003a), (Dileanis, 2003b), (Holmes et al., 2000).
Spatial Representation:	Samples were collected at the Main Drainage Canal at Gridley Road.
Temporal Representation:	Samples were collected as follows: 1/2000 - 10 on 1/30 and 1/31; 2/2000 - 34 samples with as many as 6/day; 1/2001 - 18 averaging 5/day; 2/2001 - 20 averaging 6/day; 1/2002 - 16 averaging 3/day; 2/2002 - 15 2-4/day; 3/2002 for 6 consecutive days. 18 samples were also collected in Jan. and Feb. 1994.
Data Quality Assessment:	Data from USGS reports are considered of adequate quality per section 6.1.4 of the Policy.

Region 5

Water Segment: Merced River, Lower (McSwain Reservoir to San Joaquin River)

Pollutant: Mercury

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.5 of the Listing Policy. One line of evidence is available in the administrative record to assess this pollutant.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Two of the 2 samples exceeded the OEHHA Screening Value and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Tissue

Beneficial Use: CM - Commercial and Sport Fishing (CA)

Matrix: Tissue

Water Quality Objective/ Water Quality Criterion: Central Valley RWQCB Basin Plan: All waters shall be maintained free of toxic substances in concentrations that are toxic to, or produce detrimental physiological responses in human, plant, animal, or aquatic life.

Evaluation Guideline:	0.3 ug/g-OEHHA Screening Value (Brodberg & Pollock, 1999).
Data Used to Assess Water Quality:	Two out of 2 samples exceeded. Two filet composite samples of were collected in 1998. One sample each of largemouth bass and one of channel catfish. Both samples exceeded the guideline (TSMP, 2002).
Spatial Representation:	One station located at George J. Hatfield State Recreation Area.
Temporal Representation:	Samples were collected on 11/5/98.
Data Quality Assessment:	Environmental Chemistry Quality Assurance and Data Report for the Toxic Substances Monitoring Program,1996-2000. Department of Fish and Game.

Region 5

Water Segment: Mokelumne River, North Fork

Pollutant: Copper

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under sections 3.1 of the Listing Policy. Under section 3.1 a single line of evidence is necessary to assess listing status.

One lines of evidence are available in the administrative record to assess this pollutant. Three measurements exceed the water quality criterion.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Three of 30 samples exceeded the CTR criteria for freshwater acute (CMC) and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
5. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: CO - Cold Freshwater Habitat

Matrix: Water

Water Quality Objective/ Hardness based criteria from USEPA (CTR) for freshwater acute (CMC) (13.44

Water Quality Criterion:	ppb).
Data Used to Assess Water Quality:	Three out of 30 samples exceeded the CTR criteria for dissolved copper. Historical Water Quality Results for Analytical Laboratory Measurements PG& E Company Mokelumne River Project (FERC 137) [Table A2] (PG&E, 2003b).
Spatial Representation:	Three stations along the north fork.
Temporal Representation:	Samples taken between 3/14/2001 and 5/14/2002.
Data Quality Assessment:	Well documented QA/QC including report on certified analytical reports and Chain-of-Custody documentation.

Region 5

Water Segment: Morrison Creek

Pollutant: Chlorpyrifos

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.1 of the Listing Policy. Under section 3.1 a single line of evidence is necessary to assess listing status.

One line of evidence is available in the administrative record to assess this pollutant. Three samples exceed the water quality objective.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification for placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Three of 19 samples exceeded the CDFG criteria (25 ng/L 1-hour average) and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: CO - Cold Freshwater Habitat, WA - Warm Freshwater Habitat

Matrix: Water

Water Quality Objective/ The narrative pesticide objectives state, in part:
- No individual pesticide or combination of pesticides shall be present in

Water Quality Criterion:	concentrations that adversely affect beneficial uses, - Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses, - Pesticide concentrations shall not exceed those allowable by applicable antidegradation policies, and - Pesticide concentrations shall not exceed the lowest levels technically and economically achievable. The Basin Plan narrative water quality objective for toxicity states that all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.
Evaluation Guideline:	CDFG Hazard Assessment Criteria 25 ng/L 1-hour average.
Data Used to Assess Water Quality:	Chlorpyrifos was detected 30 percent of the time at the Franklin Blvd. monitoring site, but was never detected at the upstream, rural Morrison Creek monitoring site near Sunrise Blvd. Eight samples were collected in 2001; all were non-detects. In 2003, 19 samples were taken; 3 samples at the Franklin Blvd site exceeded the CDFG criteria (Spector et al., 2004).
Spatial Representation:	The two monitoring sites that were monitored in 2003 are Morrison Creek near Sunrise Boulevard and Morrison Creek at Franklin Boulevard. In 2001, Morrison Creek was monitored by Regional Board staff at three sites - at Sunrise Boulevard, at Hedge Road, and at Franklin Boulevard. Samples were collected beneath the water surface as near as possible to the center of the stream when water levels were low or when access was only possible from the bank. Otherwise, three to four grab samples were collected as one integrated grab sample.
Temporal Representation:	Storm events were sampled during the orchard dormant spray season months of January and February 2001 and 2002, and January through April 2003, to determine pesticide concentrations in rain and creeks during and after the orchard dormant spray season.
Data Quality Assessment:	During each monitoring season, additional samples were collected for quality assurance/quality control (QA/QC) purposes. Four types of quality assurance samples were collected to confirm the integrity of analytical results reported in this three-year monitoring study. The QA/QC samples included sample duplicates, equipment blanks, matrix spikes, and matrix spike duplicates. The procedures used for collecting the QA/QC samples are based on the San Joaquin River TMDL Quality Assurance Project Plan. During this 2001-2003 study, approximately 15-25 percent of the samples collected were either equipment blanks, sample duplicates, or matrix spikes and matrix spike duplicates.

Region 5

Water Segment: Natoma, Lake

Pollutant: Mercury

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under sections 3.4 and 3.5 of the Listing Policy. Under sections 3.5 a single line of evidence is necessary to assess listing status while under section 3.4, a minimum of two lines of evidence are needed to assess listing status.

Three lines of evidence are available in the administrative record to assess this pollutant. A health advisory against the consumption of edible resident organisms has been issued by OEHHA and water segment-specific data indicates the evaluation guideline for tissue has been exceeded. In addition many measurements of tissue mercury concentration exceed the available guideline.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. A total of 11 fish species were collected. Exceedances of the CDFG criteria were recorded in 10 channel catfish (ranged from 1.1 to 1.9 mg/kg) and 14 largemouth bass (ranged from 0.27 to 0.86 mg/kg). These samples provide documentation in support of the fish consumption health advisory issued by OEHHA in September 2004 and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Tissue

Beneficial Use:	CM - Commercial and Sport Fishing (CA)
Matrix:	Tissue
Water Quality Objective/ Water Quality Criterion:	OEHHA screening value for mercury 0.3 mg/kg (ppb).
Evaluation Guideline:	USEPA criteria of 0.30 mg methylmercury/kg wet weight as the fish tissue residue criterion that should not be exceeded (Klasing & Brodberg, 2004).
Data Used to Assess Water Quality:	Water, bed sediment, and biota in Lake Natoma and two tributaries in the lower American River watershed were sampled during 2002 and 2003, providing one of the first comprehensive assessments of mercury (Hg) and methylmercury (MeHg) contamination and bioaccumulation associated with large-scale gold dredging in the Sierra Nevada. Larger fish from Lake Natoma had elevated Hg concentrations in axial muscle tissue (wet basis): 10 channel catfish (505 to 750 mm total length) ranged from 1.1 to 1.9 mg/kg; 14 largemouth bass (LMB) of legal catch size (340 to 490 mm) ranged from 0.27 to 0.86 mg/kg. Smaller fish (bluegill, redear sunfish, green sunfish, and LMB < 270 mm) generally had Hg < 0.30 mg/kg. At ten sites in Willow and Alder creeks, concentrations of MeHg in unfiltered water (0.05 to 0.76 ng/L) and filtered water (0.04 to 0.56 ng/L) correlated spatially with concentrations of MeHg in two taxa of invertebrates: Hydropsyche (caddisfly larvae, n=7) and Coenagrionidae (damselfly nymphs, n=6). In bed sediments (0-2 cm depth), potential rates of Hg methylation and demethylation correlated strongly with organic matter content, acid extractable Fe(II) concentration, and total reduced sulfur, but not with microbial sulfate reduction rates, indicating the possible role of iron-reducing bacteria in mercury methylation and demethylation (Saiki et al., 2004).
Spatial Representation:	USGS and UCD collected a total of 11 fish species at several sites in Lake Natoma, including the vicinity of Negro Bar and Mississippi Bar, the mouths of Willow Creek and Alder Creek, Natomas Slough, and near Nimbus Dam.
Temporal Representation:	USGS and UCD collected a total of 11 fish species by electrofishing equipment or gill nets in August 2000, from September to October 2002, and in July 2003.
Environmental Conditions:	Documentation in support of fish consumption health advisory issued by OEHHA in September 2004. The specific objective was to determine if total mercury concentrations in skinless fillets of selected sport fish approach or exceed criteria for human health concerns.

Numeric Line of Evidence	Health Advisories
Beneficial Use:	CM - Commercial and Sport Fishing (CA)
Matrix:	Tissue
Water Quality Objective/	Fish consumption health advisory issued by OEHHA in September 2004.

Water Quality Criterion:

Evaluation Guideline: OEHHA guidance tissue levels for methylmercury (Klasing & Brodberg, 2004).

Data Used to Assess Water Quality: USGS and UCD collected a total of 11 fish species by electrofishing equipment or gill nets in August 2000, from September to October 2002, and in July 2003, at several sites in Lake Natoma, including the vicinity of Negro Bar and Mississippi Bar, the mouths of Willow Creek and Alder Creek, Natomas Slough, and near Nimbus Dam (Saiki et al., 2004; Alpers et al., 2004). Species collected included largemouth bass, smallmouth bass, spotted bass, channel catfish, white catfish, brown bullhead, black bullhead, redear sunfish, green sunfish, bluegill, and rainbow trout. Fish were measured and weighed; boneless and skinless individual fillets were submitted to University of California, Davis (the August 2000 and July 2003 samples) or the USGS Columbia Environmental Research Center (CERC) in Columbia, Missouri (the September to October 2002 samples) for total mercury analyses by atomic absorption spectrophotometry using either a Perkin Elmer Flow Injection Mercury System or a Milestone DMA-80 analyzer. Under TSMP, the California Department of Fish and Game (CDFG) collected largemouth bass (n= 15 in three composites), pike minnow (n= 16 in three composites), and sucker samples (n = 35 in nine composites) by electrofishing equipment or gill nets in 1979-1983, 1987, and 1990-1993 near the Highway 160 and Watt Avenue bridges on the lower American River. Fish were measured and weighed and made into composites using skin-off muscle fillet. Composite samples were homogenized at the CDFG Water Pollution Control Laboratory and analyzed for total mercury by cold vapor atomic absorption spectrophotometry (Rasmussen, 1995). For the Sacramento River Watershed Program, largemouth bass (n = 26 in seven composites), striped bass (n = 1), pike minnow (n = 25 in five composites), sucker (n = 35 in seven composites), white catfish (n = 9 in two composites), and redear sunfish (n = 10 in two composites) were collected by electroshock, nets, or hook and line from 1997 to 2002 at known fishing locations on the lower American River from Sunrise Avenue to Discovery Park. Fish were measured and weighed and made into composites using skin-off muscle fillet. Composite samples were homogenized at Moss Landing Marine Laboratory and analyzed for total mercury using a Perkin Elmer Flow Injection Mercury System (Saiki et al., 2004).

Spatial Representation: Sample locations included Lake Natoma at Willow Creek, Mississippi Bar, Nimbus Dam, Alder Creek, Natomas Slough and Negro Bar.

Temporal Representation: Collection dates for USGS and UCD sampling data from Lake Natoma ranged from Aug. 2000, Sept. and Oct. 2002, and July 2003.

Environmental Conditions: Of the samples collected at Lake Natoma and the lower American River, largemouth bass (n = 64), bluegill (n = 78), pikeminnow (n = 41), sucker (n = 70), channel catfish (n =11), white catfish (n = 10) and redear sunfish (n = 20) had sufficient sample size (≥ 9 fish per species) of legal/edible size fish to be considered representative of mercury levels in those species, thereby allowing adequate estimation of the health risks associated with their consumption.

Data Quality Assessment: The health advisory was based on data from UC Davis monitoring programs and published U.S. Geological Survey (USGS) reports. The Policy considers

	documentation from these sources to be of adequate quality.
Line of Evidence	Pollutant-Tissue
Beneficial Use	CM - Commercial and Sport Fishing (CA)
Information Used to Assess Water Quality:	Supplemental information from a relational database and GIS for Hg. The present study was intended to assess the fishing intensity and mercury concentrations in fish tissue data that are currently available. This assessment will inform this goal of the CALFED Mercury Strategy as well as the goal of the Delta Tributaries Mercury Council to reduce the risk of mercury exposure of humans and wildlife. In order to serve these goals, critical information includes the relative distribution of fishing intensity and fish concentrations of mercury and knowledge of the communities from which anglers are originating. Fish tissue mercury concentrations >0.3 ppm have been measured in the Upper American River.

Region 5

Water Segment: Orestimba Creek (below Kilburn Road)

Pollutant: Sediment Bioassays -- Chronic Toxicity -- Freshwater

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.6 of the Listing Policy. Under section 3.6 a single line of evidence is necessary to assess listing status.

One line of evidence is available in the administrative record to assess this pollutant. Most of the samples exceed the water quality objective.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Three of 4 samples exceeded the water quality objective and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded.

Lines of Evidence:

Numeric Line of Evidence Toxicity

Beneficial Use: MI - Fish Migration, WA - Warm Freshwater Habitat, WI - Wildlife Habitat

Matrix: Sediment

Water Quality Objective/ Water Quality Criterion: Waters are to remain free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal or aquatic life. Toxicity may be caused by a single substance or the interactive effect of multiple

	substances. From the Region 5 Basin Plan, September, 1998.
Data Used to Assess Water Quality:	Three out of four samples displayed statistically significant toxicity in the survival endpoint when compared to the negative control based on a statistical test with alpha of less than 5%. All samples were tested using the Hyalella azteca test. Please note QA qualifier under Data Quality Assessment section below (SWAMP, 2004).
Spatial Representation:	All three samples were collected from the same station; Orestimba Creek at River Road.
Temporal Representation:	Samples were collected on Oct. 9, 2001, and Sept. 19, 2002, May 29, 2002 and April 11, 2003. Toxicity in the survival endpoint was detected in samples collected in October 2001, September 2002 and April 2003.
Environmental Conditions:	The water body is located in the San Joaquin River Sub-Basin, on the west side, in the Stanislaus County valley floor. The site is just upstream of Highway 140/Crows Landing Road.
Data Quality Assessment:	SWAMP QAPP. The sample collected October 9. 2001 from Orestimba Creek at River Road was received at an improper temperature.

Region 5

Water Segment:	Sacramento River (Keswick Dam to Cottonwood Creek)
Pollutant:	Cadmium
Decision:	List
Weight of Evidence:	This pollutant is being considered for listing under section 2.2 of the Listing Policy. Under this section of the Policy, a minimum of one line of evidence is needed to assess listing status. One line of evidence is available in the administrative record to assess this pollutant. Based on the applicable factor, a TMDL has been developed and approved by USEPA and an approved implementation plan is expected to result in attainment of the standard. This water segment-pollutant combination was moved off the section 303(d) list during the 2002 listing cycle. Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination in the Water Quality Limited Segments Being Addressed portion of the section 303(d) list.
SWRCB Staff Recommendation:	After review of the available data and information for this recommendation, SWRCB staff conclude that the water body should be placed in the Water Quality Limited Segments Being Addressed category of the section 303(d) list because a TMDL has been approved by USEPA and an implementation plan has been approved.

Lines of Evidence:

Line of Evidence	Remedial Program in Place
Beneficial Use	WA - Warm Freshwater Habitat
Information Used to Assess Water Quality:	TMDL completed in 2002.

Region 5

Water Segment:	Sacramento River (Keswick Dam to Cottonwood Creek)
Pollutant:	Copper
Decision:	List
Weight of Evidence:	This pollutant is being considered for listing under section 2.2 of the Listing Policy. Under this section of the Policy, a minimum of one line of evidence is needed to assess listing status. One line of evidence is available in the administrative record to assess this pollutant. Based on the applicable factor, a TMDL has been developed and approved by USEPA and an approved implementation plan is expected to result in attainment of the standard. This water segment-pollutant combination was moved off the section 303(d) list during the 2002 listing cycle. Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination in the Water Quality Limited Segments Being Addressed portion of the section 303(d) list.
SWRCB Staff Recommendation:	After review of the available data and information for this recommendation, SWRCB staff conclude that the water body should be placed in the Water Quality Limited Segments Being Addressed category of the section 303(d) list because a TMDL has been approved by USEPA and an implementation plan has been approved.

Lines of Evidence:

Line of Evidence	Remedial Program in Place
Beneficial Use	WA - Warm Freshwater Habitat
Information Used to Assess Water Quality:	TMDL completed in 2002.

Region 5

Water Segment:	Sacramento River (Keswick Dam to Cottonwood Creek)
Pollutant:	Zinc
Decision:	List
Weight of Evidence:	This pollutant is being considered for listing under section 2.2 of the Listing Policy. Under this section of the Policy, a minimum of one line of evidence is needed to assess listing status. One line of evidence is available in the administrative record to assess this pollutant. Based on the applicable factor, a TMDL has been developed and approved by USEPA and an approved implementation plan is expected to result in attainment of the standard. This water segment-pollutant combination was moved off the section 303(d) list during the 2002 listing cycle. Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination in the Water Quality Limited Segments Being Addressed portion of the section 303(d) list.
SWRCB Staff Recommendation:	After review of the available data and information for this recommendation, SWRCB staff conclude that the water body should be placed in the Water Quality Limited Segments Being Addressed category of the section 303(d) list because a TMDL has been approved by USEPA and an implementation plan has been approved.

Lines of Evidence:

Line of Evidence	Remedial Program in Place
Beneficial Use	WA - Warm Freshwater Habitat
Information Used to Assess Water Quality:	TMDL completed in 2002.

Region 5

Water Segment: Sacramento River (Red Bluff to Knights Landing)

Pollutant: Mercury

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.5 of the Listing Policy. One line of evidence is available in the administrative record to assess this pollutant.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Three of the 5 samples exceeded the OEHHA Screening Value and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Tissue

Beneficial Use: CM - Commercial and Sport Fishing (CA)

Matrix: Tissue

Water Quality Objective/ Water Quality Criterion: Central Valley RWQCB Basin Plan: All waters shall be maintained free of toxic substances in concentrations that are toxic to, or produce detrimental physiological responses in human, plant, animal, or aquatic life.

Evaluation Guideline:	0.3 ug/g - OEHHA Screening Value (Brodberg & Pollock, 1999).
Data Used to Assess Water Quality:	Three out of 5 samples exceeded. A total of 5 filet composites and one individual sample of largemouth bass were collected. The composite samples consisted of one each largemouth bass and Sacramento pike minnow, and 2 sucker composites. All samples were collected in 2002. Both largemouth bass samples and the pike minnow sample exceed the guideline. The sucker samples did not exceed the guideline (TSMP, 2002).
Spatial Representation:	Two stations were sampled: in the Arnold Bend area (Colusa) and about one mile upstream from Colusa Drain outlet (Knights Landing).
Temporal Representation:	Samples were collected 9/13/2002 and 10/29/2002.
Data Quality Assessment:	Toxic Substances Monitoring Program 1992-93 Data Report. Environmental Chemistry Quality Assurance and Data Report for the Toxic Substances Monitoring Program, 2001-2002. Department of Fish and Game.

Region 5

Water Segment:	Salt Slough (upstream from confluence with San Joaquin River)
Pollutant:	Selenium
Decision:	List
Weight of Evidence:	This pollutant is being considered for listing under section 2.2 of the Listing Policy. Under this section of the Policy, a minimum of one line of evidence is needed to assess listing status. One line of evidence is available in the administrative record to assess this pollutant. Based on the applicable factor, a TMDL has been developed and approved by USEPA and an approved implementation plan is expected to result in attainment of the standard. This water segment-pollutant combination was moved off the section 303(d) list during the 2002 listing cycle. Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination in the Water Quality Limited Segments Being Addressed portion of the section 303(d) list.
SWRCB Staff Recommendation:	After review of the available data and information for this recommendation, SWRCB staff conclude that the water body should be placed in the Water Quality Limited Segments Being Addressed category of the section 303(d) list because a TMDL has been approved by USEPA and an implementation plan has been approved.

Lines of Evidence:

Line of Evidence	Remedial Program in Place
Beneficial Use	MU - Municipal & Domestic
Information Used to Assess Water Quality:	TMDL completed in 1999.

Region 5

Water Segment: San Joaquin River (Friant Dam to Mendota Pool)

Pollutant: Exotic Species

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.10 of the Listing Policy. Under section 3.10 a single line of evidence is necessary to assess listing status.

One line of evidence is available in the administrative record to assess this pollutant. Comparative analysis between four studies, from 1898 to 1971 was used to show an increase of non-native species and a decrease in native species over time.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. Four studies were used spanning from 1898 to 1971.
2. Baseline data was taken from the 1898, 1934, and 1940-41 studies.
3. In a 1898 survey: 9 native species collected, 0 non-native species collected; in a 1934 survey: 10 native species were collected and 4 non-native species were collected; in a 1940-1941 survey: 13 native species were collected and 8 non-native species were collected; and in a 1969-71 survey: 6 native species were collected and 7 non-native species were collected. As the number of non-native fish species increased, the number of native fish species decreased over time.
6. It cannot be determined if the trend in water quality is expected to meet water standards by the next listing cycle.
7. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Population/Community Degradation

Beneficial Use:	WA - Warm Freshwater Habitat
Matrix:	Water
Water Quality Objective/ Water Quality Criterion:	All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Water Board. Taken from Region 5 Basin Plan, Page III-8.00, Water Quality Objectives.
Data Used to Assess Water Quality:	A fish survey was completed between 1969-1971 (Moyle and Nichols, 1974). Data was compared to previous collections, as follows: (1) in a 1898 survey: 9 native species collected, 0 non-native species collected; (2) in a 1934 survey: 10 native species collected and 4 non-native species collected; (3) in a 1940-1941 survey: 13 native species collected and 8 non-native species collected; and (4) in a 1969-71 survey (this study): 6 native species collected and 7 non-native species collected. As the number of non-native fish species increased, the number of native fish species decreased over time.
Spatial Representation:	Samples were collected at 167 locations during the summer and autumns of 1969, 1970, and 1971 for this study at Friant Dam on the San Joaquin River.
Temporal Representation:	Time range from 1898 to 1971. Samples from the study were compared to measurements collected in 1898, 1934, and 1940-1941. This study: summer and autumns of 1969, 1970 and 1971.
Environmental Conditions:	Changes in relative diversity and abundance of native species may also be driven by habitat alteration, flow changes, or hydromodification.
Data Quality Assessment:	Peer Reviewed Journal Article.

Region 5

Water Segment:	San Joaquin River (Merced River to Tuolumne River)
Pollutant:	Selenium
Decision:	List
Weight of Evidence:	This pollutant is being considered for listing under section 2.2 of the Listing Policy. Under this section of the Policy, a minimum of one line of evidence is needed to assess listing status. One line of evidence is available in the administrative record to assess this pollutant. Based on the applicable factor, a TMDL has been developed and approved by USEPA and an approved implementation plan is expected to result in attainment of the standard. This water segment-pollutant combination was moved off the section 303(d) list during the 2002 listing cycle. Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination in the Water Quality Limited Segments Being Addressed portion of the section 303(d) list.
SWRCB Staff Recommendation:	After review of the available data and information for this recommendation, SWRCB staff conclude that the water body should be placed in the Water Quality Limited Segments Being Addressed category of the section 303(d) list because a TMDL has been approved by USEPA and an implementation plan has been approved.

Lines of Evidence:

Line of Evidence	Remedial Program in Place
Beneficial Use	MU - Municipal & Domestic
Information Used to Assess Water Quality:	TMDL completed in 2002.

Region 5

Water Segment: Sugar Pine Creek (tributary to Lower Bear River Reservoir)

Pollutant: Copper

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.1 of the Listing Policy. Under section 3.1 a single line of evidence is necessary to assess listing status.

One line of evidence is available in the administrative record to assess this pollutant. Two samples exceeded the water quality objective. A sample from snowmelt also exceeded the standard.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Two of 3 samples exceeded the hardness-based criteria (CTR) for freshwater acute (CMC) and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: CO - Cold Freshwater Habitat, WA - Warm Freshwater Habitat

Matrix: Water

Water Quality Objective/ Water Quality Criterion:	Hardness based criteria from USEPA (CTR) for freshwater acute (CMC).
Data Used to Assess Water Quality:	Two out of 3 samples at this location exceeded the CTR 1-hour criterion. In addition, one sample of snowmelt collected near Sugar Pine Creek exceeded the criterion (PG&E, 2003b).
Spatial Representation:	Small tributary flow from snowmelt near Sugar Pine creek, northwest shore of Lower Bear River Reservoir. Latitude (38° 33.21 N); Longitude (120° 14.36 W).
Temporal Representation:	Samples taken from 4/23/2002 to 6/11/2002.
Data Quality Assessment:	Well documented QA/QC including report on certified analytical reports and chain-of-custody documentation.

Region 5

Water Segment: Wadsworth Canal

Pollutant: Diazinon

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.1 of the Listing Policy. Under section 3.1 a single line of evidence is necessary to assess listing status.

One line of evidence is available in the administrative record to assess this pollutant. Over half of the samples exceeded the water quality guideline.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Eighty-seven of 162 exceeded the CDFG Hazard Assessment guideline and this exceeds the allowable frequency listed in Table 3.1 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: CO - Cold Freshwater Habitat

Matrix: Water

Water Quality Objective/ No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. Discharges shall not result in

Water Quality Criterion:	pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses.
Evaluation Guideline:	CDFG Hazard Assessment Criteria - 0.10 ug/L 4-day average and 0.16 ug/L 1-hour average (Siepmann & Finlayson, 2002).
Data Used to Assess Water Quality:	Eighty-seven of 162 samples exceeded the acute guideline (4-day average) (Dileanis et al., 2002), (Dileanis, 2003a), (Dileanis, 2003b), (Gill, 2002), (Holmes et al., 2000), (Nordmark, 1999), (Nordmark, 2000).
Spatial Representation:	Samples were collected at Wadsworth Canal at Franklin Road; in 2000 samples were also collected from Wadsworth Canal at South Butte Road.
Temporal Representation:	Samples were collected in Jan. and Feb (2/day) 1994, 1999, 2000, 2001and 2002; 2 in Dec. 1998; in 2000 and 2001, 3 samples were collected in March, 3/day in 2002.
Data Quality Assessment:	Data from USGS reports are considered of adequate quality per section 6.1.4 of the Policy.

Region 5

Water Segment: Willow Creek (Madera County)

Pollutant: Temperature, water

Decision: List

Weight of Evidence: This pollutant is being considered for placement on the section 303(d) list under section 3.2 of the Listing Policy. Under section 3.2 a single line of evidence is necessary to assess listing status.

One line of evidence is available in the administrative record to assess this pollutant. A large number of temperature values exceeded the water quality objective.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of placing this water segment-pollutant combination on the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Eight of 11 annual maximum temperature values for the South Fork of Willow Creek below Forest Service Road (SfW 5.8 & 7.7), exceeded the 21.0°C criteria for steelhead and this exceeds the allowable frequency listed in Table 3.2 of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be placed on the section 303(d) list because applicable water quality standards are exceeded and a pollutant contributes to or causes the problem.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: AG - Agricultural Supply, CO - Cold Freshwater Habitat

Matrix: Water

Water Quality Objective/ Water Quality Criterion:	The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. Temperature objectives for COLD interstate waters, WARM interstate waters, and Enclosed Bays and Estuaries are as specified in the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California including any revisions. There are also temperature objectives for the Delta in the State Water Board's May 1991 Water Quality Control Plan for Salinity. At no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature. Temperature changes due to controllable factors shall be limited for the water bodies specified as described in Table III-4. To the extent of any conflict with the above, the more stringent objective applies. In determining compliance with the water quality objectives for temperature, appropriate averaging periods may be applied provided that beneficial uses will be fully protected.
Evaluation Guideline:	The guideline used was from Sullivan et al (2000). Published Temperature Thresholds-Peer Reviewed Literature which includes reviewed sub-lethal and acute temperature thresholds from a wide range of studies, incorporating information from laboratory-based research, field observations, and risk assessment approaches. This report calculated the Annual Maximum (instantaneous maximum observed during the summer) upper threshold criterion for steelhead trout as 21.0°C. The risk assessment approach used by Sullivan et al (2000) suggests that an upper threshold for the Annual Maximum of 21.0°C for steelhead will reduce average growth 10% from optimum.
Data Used to Assess Water Quality:	Stream temperatures were measured with Omnidata Model 112 temperature recorders at 2 locations on Willow Creek. Data was collected daily at different times of the day. Monitoring occurred from 1986 to 1996. At sampling location NFWC 11, below Bass Lake, two annual maximum temperature values (values for years 1990 and 1995 only) exceeded the 21.0°C criteria for steelhead. For sampling location SFWC 5.8 and 7.7, below Forest Service Road, 8 annual maximum temperature values exceeded the 21.0°C criteria for steelhead (PG&E, 2001).
Spatial Representation:	Stream temperatures were monitored at the following stream segments: NFWC (North Fork Willow Creek) below Bass Lake (SfW 11), and SFWC (South Fork Willow Creek) below Forest Service Road (SfW 5.8 and 7.7).
Temporal Representation:	The data was collected on a daily basis at varying times of the day. Monitoring occurred in all years from 1986 to 1996.
Data Quality Assessment:	Data is supported by a Quality Assurance Project Plan (QAPP) pursuant to the requirements of 40 CFR 31.45 and are acceptable for use in developing the section 303(d) list.

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Central Valley Region (5)

DELIST

Recommendations to remove waters and pollutants from the section 303(d) List

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Region 5

Water Segment: Feather River, Lower (Lake Oroville Dam to Confluence with Sacramento River)

Pollutant: Diazinon

Decision: Delist

Weight of Evidence: Three lines of evidence are available in the administrative record to assess this pollutant.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of removing this water segment-pollutant combination from the section 303(d) list in the Water Quality Limited Segments category.

This conclusion is based on the staff findings that:
1. The CDFG Hazard Assessment Criteria used complies with the requirements of section 6.1.3 of the Policy.
2. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
3. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
4. Thirteen of 218 samples taken over a period from 1994 through 2003 exceeded the CDFG acute criteria and 3 out of 129 exceeded the chronic criteria. These combined exceedances do not exceed the allowable frequency of the Listing Policy. Additionally, a remedial program is in place; a TMDL and implementation plan has been approved for this water segment-pollutant combination.
5. Pursuant to section 4.11 of the Listing Policy, no additional data and information are available indicating that standards are met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be removed from the section 303(d) list because applicable water quality standards for the pollutant are not exceeded.

Lines of Evidence:

Line of Evidence Pollutant-Water

Beneficial Use AG - Agricultural Supply, CO - Cold Freshwater Habitat, IN - Industrial Service Supply, MI - Fish Migration, NA - Navigation, R1 - Water Contact Recreation, R2 - Non-Contact Recreation, SP - Fish Spawning, WA - Warm Freshwater Habitat, WI - Wildlife Habitat

Non-Numeric Objective: No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. Discharges shall not result in

	pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses. Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by the Environmental Protection Agency or the executive Officer. Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of pesticides in excess of the Maximum Contaminant Levels set forth in California Code of Regulations, Title 22, Division 4, Chapter 15.
Evaluation Guideline:	CDFG Hazard Assessment Criteria 0.16 ug/L 1-hour average (Siepmann & Finlayson, 2002).
Data Used to Assess Water Quality:	There were 30 samples which were considered to be of "questionable" quality and therefore were not used in the assessment of this water body for this pollutant. Of the remaining 218 samples, 13 were in exceedance of the acute criteria and 3 out of 120 samples exceeded the chronic criteria (Dileanis et al., 2002), (Dileanis, 2003a), (Dileanis, 2003b), (Dileanis, 2003c), (Larsen et al., 1998), (Holmes et al., 2000), (Foe & Sheipline, 1993), (Larry Walker Associates, 2002).
Spatial Representation:	In 1994, 2000-01, samples were collected along the Feather River at Yuba City and Nicolaus. In 2001 Star Bend was also sampled. Samples were collected on the Feather River near Gridley and Verona in 2003.
Temporal Representation:	2000 samples were collected in late January/early February. Samples were collected in late January, February and early March 2002. Samples were also collected near Verona in 2003.

Line of Evidence	Pollutant-Water
Beneficial Use	AG - Agricultural Supply, CO - Cold Freshwater Habitat, IN - Industrial Service Supply, MI - Fish Migration, NA - Navigation, R1 - Water Contact Recreation, R2 - Non-Contact Recreation, SP - Fish Spawning, WA - Warm Freshwater Habitat, WI - Wildlife Habitat
Information Used to Assess Water Quality:	Immediately after collection, sample bottles were placed on ice and delivered to CDFA Center for Analytical Chemistry in Sacramento. Samples were usually delivered on the same day and no later than 48 hours after collection.
Non-Numeric Objective:	No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses. Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by the Environmental Protection Agency or the executive Officer. Pesticide concentrations shall not exceed the lowest levels technically and economically achievable. Waters designated for

	use as domestic or municipal supply (MUN) shall not contain concentrations of pesticides in excess of the Maximum Contaminant Levels set forth in California Code of Regulations, Title 22, Division 4, Chapter 15.
Evaluation Guideline:	CDFG Hazard Assessment Criteria: 0.16 ug/L 1-hour average, 0.10 ug/L 4-day chronic average (Siepmann & Finlayson, 2002).
Data Used to Assess Water Quality:	Fifteen samples were taken; none exceeded the acute CDFG criteria. None of nine samples exceeded the chronic criteria.
Spatial Representation:	Seven sites were monitored in the Sacramento River Basin (Feather River near Nicolaus/Verona). Isokinetic, depth integrated water samples were collected at 6-10 equally spaced points across the channel width with a USGS D-77 sampler using the equal-width-increment method (EWI). Samples were collected from a boat. The PTFE bottles were used to minimize loss of pesticide due to sorption to container walls.
Temporal Representation:	Sampling frequency for each storm event was one sample/day was taken for 7 days. Two storm events were sampled for the 2004 TMDL project in the Sacramento River Basin. The first storm event (Storm 1) was the period 28 January to 6 February 2004. The second storm event (Storm 2) was the period 15-23 February, 2004. For storm 1 sampling was conducted from 28 January to 3 February. For storm 2 the sampling period began on 16 February and extended until 22 February. On 2 and 3 February, a single grab sample was collected from the bank. The Feather River was sampled on 22 February; these samples were collected with a D77 using the EWI method (Calanchini, 2004).

Line of Evidence	Remedial Program in Place
Beneficial Use	AG - Agricultural Supply, CO - Cold Freshwater Habitat, IN - Industrial Service Supply, MI - Fish Migration, NA - Navigation, R1 - Water Contact Recreation, R2 - Non-Contact Recreation, SP - Fish Spawning, WA - Warm Freshwater Habitat, WI - Wildlife Habitat
Information Used to Assess Water Quality:	A TMDL and implementation plan has been approved for this water segment-pollutant combination. The Sacramento and Feather River Diazinon TMDL was approved by RWQCB on October 16, 2003 and subsequently approved by USEPA on August 11, 2004.

Region 5

Water Segment: Morrison Creek

Pollutant: Diazinon

Decision: Delist

Weight of Evidence: This pollutant is being considered for removal from the section 303(d) list under section 4.1 of the Listing Policy. Under section 4.1 a single line of evidence is necessary to assess delisting status.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of removing this water segment-pollutant combination from the section 303(d) list.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. None of the 28 samples exceeded the CDFG Hazard Assessment Criteria and this does not exceed the allowable frequency listed in Table 4.1 of the Listing Policy.
4. Pursuant to section 4.11 of the Listing Policy, no additional data and information are available indicating that standards are met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be removed from the section 303(d) list because applicable water quality standards for the pollutant are not exceeded.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: CO - Cold Freshwater Habitat, WA - Warm Freshwater Habitat

Matrix: Water

Water Quality Objective/ Water Quality Criterion: The narrative pesticide objectives state, in part:
- No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses,
- Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses,
- Pesticide concentrations shall not exceed those allowable by applicable antidegradation policies, and

	- Pesticide concentrations shall not exceed the lowest levels technically and economically achievable. The Basin Plan narrative water quality objective for toxicity states that all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.
Evaluation Guideline:	CDFG Hazard Assessment Criteria 0.16 ug/L 1-hour average (Siepmann & Finlayson, 2002).
Data Used to Assess Water Quality:	Out of 28 samples, none were in exceedance (Spector et al., 2004).
Spatial Representation:	The two monitoring sites that were monitored in 2003 are Morrison Creek near Sunrise Boulevard and Morrison Creek at Franklin Boulevard. In 2001, Morrison Creek was monitored by Regional Board staff at three sites - at Sunrise Boulevard, at Hedge Road, and at Franklin Boulevard. Samples were collected beneath the water surface as near as possible to the center of the stream when water levels were low or when access was only possible from the bank. Otherwise, three to four grab samples were collected as one integrated grab sample.
Temporal Representation:	Storm events were sampled during the orchard dormant spray season months of January and February 2001 and 2002, and January through April 2003, to determine pesticide concentrations in rain and creeks during and after the orchard dormant spray season.
Data Quality Assessment:	During each monitoring season, additional samples were collected for quality assurance/quality control (QA/QC) purposes. Four types of quality assurance samples were collected to confirm the integrity of analytical results reported in this three-year monitoring study. The QA/QC samples included sample duplicates, equipment blanks, matrix spikes, and matrix spike duplicates. The procedures used for collecting the QA/QC samples are based on the San Joaquin River TMDL Quality Assurance Project Plan. During this 2001-2003 study, approximately 15-25 percent of the samples collected were either equipment blanks, sample duplicates, or matrix spikes and matrix spike duplicates.

Region 5

Water Segment: Sacramento River (Knights Landing to the Delta)

Pollutant: Diazinon

Decision: Delist

Weight of Evidence: Three lines of evidence are available in the administrative record to assess this pollutant. Based on the applicable factor, a TMDL has been developed and approved by USEPA and an approved implementation plan is expected to result in attainment of the standard.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of removing this water segment-pollutant combination from the Water Quality Limited Segments portion of the section 303(d) list.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. Out of 1,109 samples, 12 samples exceeded the acute criteria and additional 14 samples exceeded the chronic criteria. This does not exceed the allowable frequency of the Listing Policy.
4. Pursuant to section 3.11 of the Listing Policy, no additional data and information are available indicating that standards are not met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be removed from the section 303(d) list because applicable water quality standards for the pollutant are not exceeded.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: CO - Cold Freshwater Habitat, IN - Industrial Service Supply, MI - Fish Migration, NA - Navigation, R1 - Water Contact Recreation, R2 - Non-Contact Recreation, SP - Fish Spawning, WA - Warm Freshwater Habitat, WI - Wildlife Habitat

Matrix: Water

Water Quality Objective/ Pesticide concentrations shall not exceed those allowable by applicable

Water Quality Criterion:	antidegradation policies (see State Water Resources Control Board Resolution No. 68-16 and 40 CFR section 131.12). No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses.
Evaluation Guideline:	CDFG Hazard Assessment Criteria 0.16 ug/L 1-hour average (acute), 0.10 ug/L 4-day (chronic) average.
Data Used to Assess Water Quality:	Thirty-four samples were taken; 1 sample exceeded both the acute and chronic CDFG criteria.
Spatial Representation:	Monitoring sites included the Sacramento River at Tower Bridge and Sacramento River at Veterans Bridge. Sampling frequency for each storm event was one sample/day was taken for 7days. At the Tower Bridge site two additional days of sampling were performed during the first storm event because ELISA (Enzyme-Linked Immunosorbent Assay) tests indicated a continuing presence of diazinon in the water. These two samples (5 and 6 February) were collected using a 3L PTFE bottle lowered by line from three equally spaced points across the channel width. On 2 and 3 February, for sampling at Veterans Bridge a single grab sample was collected from the bank at each site. Isokinetic, depth integrated water samples were collected at 6-10 equally spaced points across the channel width with a USGS D-77 sampler using the equal-width-increment method (EWI). Samples were collected from a boat at three sites (Sacramento River at Veterans Bridge, Feather River near Nicolaus/Verona and Sacramento Slough) and from a bridge at one site (Sacramento River at Tower Bridge).
Temporal Representation:	Two storm events were sampled for the 2004 TMDL project in the Sacramento River Basin. The first storm event (Storm 1) was the period 28 January to 6 February 2004. The second storm event (Storm 2) was the period 15-23 February, 2004. For storm 1 sampling was conducted from 28 January to 3 February at most sites, and as late as 6 February at the Tower Bridge at Sacramento site. For storm 2 the sampling period began on 16 February and extended until 22 February at most sites, and through 23 February at the Sacramento River at Veterans Bridge and Sacramento River at Tower Bridge sites.
Data Quality Assessment:	Sample quality control was measured through collection of sequential duplicates (n=8), blanks (n=5) and matrix spikes (n=5). The relative percent difference (RPD) between environmental and duplicate sample concentrations of chlorpyrifos ranged from 0-104%. The RPDs between environmental and duplicate sample concentrations of diazinon ranged from 0-40%.

Numeric Line of Evidence	Pollutant-Water
Beneficial Use:	CO - Cold Freshwater Habitat, IN - Industrial Service Supply, MI - Fish Migration, NA - Navigation, R1 - Water Contact Recreation, R2 - Non-Contact

	Recreation, SP - Fish Spawning, WA - Warm Freshwater Habitat, WI - Wildlife Habitat
Matrix:	Water
Water Quality Objective/ Water Quality Criterion:	No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses.
Evaluation Guideline:	CDFG Hazard Assessment Criteria 0.16 ug/L 1-hour average (acute), 0.10 ug/L 4-day average (chronic).
Data Used to Assess Water Quality:	Out of 1,089 samples, 15 were considered to be of "questionable" quality and therefore were not used as part of this assessment. Of the remaining 1,075 samples, there were 11 that exceeded the acute criteria and 14 additional samples exceeded the chronic criteria (Dileanis et al., 2002), (Dileanis, 2003a), (Dileanis 2003b), (Dileanis 2003c), (Domagalski, 2000), (Gill, 2002), (LWA, 1996), (LWA, 2002a), (LWA, 2002b), (MacCoy et al., 1995), (Nordmark et al., 1998a), (Nordmark, 1998), (Nordmark, 1999), (Nordmark, 2000).
Spatial Representation:	Samples were collected at Alamar, Bryte, Freeport, Sacramento, River Mile 44, and Verona.
Temporal Representation:	Samples were taken from 1995 through 2001; samples at Sacramento began in 1992.

Line of Evidence	Remedial Program in Place
Beneficial Use	CO - Cold Freshwater Habitat, IN - Industrial Service Supply, MI - Fish Migration, NA - Navigation, R1 - Water Contact Recreation, R2 - Non-Contact Recreation, SP - Fish Spawning, WA - Warm Freshwater Habitat, WI - Wildlife Habitat
Information Used to Assess Water Quality:	A TMDL and implementation plan has been approved for this water segment-pollutant combination. The Sacramento and Feather River Diazinon TMDL was approved by RWQCB on October 16, 2003 and subsequently approved by USEPA on August 11, 2004.

Region 5

Water Segment: Sutter Bypass

Pollutant: Diazinon

Decision: Delist

Weight of Evidence: This pollutant is being considered for removal from the section 303(d) list under section 4.1 of the Listing Policy. Under section 4.1 a single line of evidence is necessary to assess delisting status.

One line of evidence is available in the administrative record to assess this pollutant.

Based on the readily available data and information, the weight of evidence indicates that there is sufficient justification in favor of removing this water segment-pollutant combination from the section 303(d) list.

This conclusion is based on the staff findings that:
1. The data used satisfies the data quality requirements of section 6.1.4 of the Policy.
2. The data used satisfies the data quantity requirements of section 6.1.5 of the Policy.
3. None of 88 samples exceeded the CDFG criteria and this does not exceed the allowable frequency listed in Table 4.1 of the Listing Policy.
4. Pursuant to section 4.11 of the Listing Policy, no additional data and information are available indicating that standards are met.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the water body-pollutant combination should be removed from the section 303(d) list because applicable water quality standards for the pollutant are not exceeded.

Lines of Evidence:

Numeric Line of Evidence Pollutant-Water

Beneficial Use: AG - Agricultural Supply, WI - Wildlife Habitat

Matrix: Water

Water Quality Objective/ Water Quality Criterion: No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses. Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the water column at concentrations detectable within the

	accuracy of analytical methods approved by the Environmental Protection Agency or the executive Officer. Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of pesticides in excess of the Maximum Contaminant Levels set forth in California Code of Regulations, Title 22, Division 4, Chapter 15. Pesticide concentrations shall not exceed those allowable by applicable antidegradation policies (see State Water Resources Control Board Resolution No. 68-16 and 40 C.F.R. Section 131.12). Pesticide concentrations shall not exceed the lowest levels technically and economically achievable. A trend in declining water quality has not been established per the Policy in section 3.1.10.
Evaluation Guideline:	CDFG Hazard Assessment Criteria -0.16 ug/L (acute) (Siepmann & Finlayson, 2002).
Data Used to Assess Water Quality:	None of the 88 samples exceeded the criteria (Gill, 2002), (Nordmark et al., 1998a), (Nordmark, 1998), (Nordmark, 1999), (Nordmark, 2000).
Spatial Representation:	Samples collected at Karnak and Kirkville Road.
Temporal Representation:	Samples taken from 1996 to 2001.

Central Valley Region (5)

Area Change

Recommendations to change the area affected by pollutants on the section 303(d) List

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Region 5

Water Segment:	Delta Waterways (Stockton Ship Channel)
Pollutant:	
Decision:	Accept Area Change
Weight of Evidence:	The data and information in the administrative record supports this change in estimated size affected.
SWRCB Staff Recommendation:	After review of the available data and information, SWRCB staff concludes that the estimated size affected should be changed as presented.
Lines of Evidence:	

Line of Evidence	-N/A
Beneficial Use	MU - Municipal & Domestic
Information Used to Assess Water Quality:	Map changes are recommended to more accurately identify the water quality limited segment.

Region 5

Water Segment: Delta Waterways (eastern portion)

Pollutant:

Decision: Accept Area Change

Weight of Evidence: The data and information in the administrative record supports this change in estimated size affected.

SWRCB Staff Recommendation: After review of the available data and information, SWRCB staff concludes that the estimated size affected should be changed as presented.

Lines of Evidence:

Line of Evidence	-N/A
Beneficial Use	MU - Municipal & Domestic
Information Used to Assess Water Quality:	Map changes are recommended to more accurately identify the water quality limited segment.

Region 5

Water Segment:	Delta Waterways (western portion)
Pollutant:	
Decision:	Accept Area Change
Weight of Evidence:	The data and information in the administrative record supports this change in estimated size affected.
SWRCB Staff Recommendation:	After review of the available data and information, SWRCB staff concludes that the estimated size affected should be changed as presented.
Lines of Evidence:	

Line of Evidence	-N/A
Beneficial Use	MU - Municipal & Domestic
Information Used to Assess Water Quality:	Map changes are recommended to more accurately identify the water quality limited segment.

Region 5

Water Segment:	Marsh Creek (Dunn Creek to Marsh Creek Reservoir)
Pollutant:	Mercury
Decision:	Accept Area Change
Weight of Evidence:	The data and information in the administrative record supports this change in estimated size affected.
SWRCB Staff Recommendation:	After review of the available data and information, SWRCB staff concludes that the estimated size affected should be changed as presented.
Lines of Evidence:	

Line of Evidence	-N/A
Beneficial Use	CM - Commercial and Sport Fishing (CA)
Data Used to Assess Water Quality:	The total size and size affected were reassessed by SWRCB staff and RWQCB staff, subsequent to the RWQCB's first change recommendation. This water body has been remapped and the revised extent impacted is 10 mile section and a second 11 mile section. The new extent is calculated by the Geospatial Water Body System (GeoWBS), using staff's best estimate of the extent to which water quality standards are not met. Change in Total Size and Size Affected. Change listing from the total length of 24 miles to 8.5 miles. Extent of affected area to be changed from all of Marsh Creek to Marsh Creek from Dunn Creek to Marsh Creek Reservoir. The affected length of Marsh Creek for this listing is only the 8.5 miles from Dunn Creek to the Marsh Creek Reservoir.

Region 5

Water Segment:	Marsh Creek (Dunn Creek to Marsh Creek Reservoir)
Pollutant:	Metals
Decision:	Accept Area Change
Weight of Evidence:	The data and information in the administrative record supports this change in estimated size affected.
SWRCB Staff Recommendation:	After review of the available data and information, SWRCB staff concludes that the estimated size affected should be changed as presented.
Lines of Evidence:	

Line of Evidence	-N/A
Beneficial Use	CM - Commercial and Sport Fishing (CA)
Data Used to Assess Water Quality:	The total size and size affected were reassessed by SWRCB staff and RWQCB staff, subsequent to the RWQCB's first change recommendation. This water body has been remapped and the revised extent impacted is 10 mile section and a second 11 mile section. The new extent is calculated by the Geospatial Water Body System (GeoWBS), using staff's best estimate of the extent to which water quality standards are not met. Change in Total Size and Size Affected. Change listing from the total length of 24 miles to 8.5 miles. Extent of affected area to be changed from all of Marsh Creek to Marsh Creek from Dunn Creek to Marsh Creek Reservoir. The affected length of Marsh Creek for this listing is only the 8.5 miles from Dunn Creek to the Marsh Creek Reservoir.

Region 5

Water Segment:	Marsh Creek (Marsh Creek Reservoir to San Joaquin River)
Pollutant:	Mercury
Decision:	Accept Area Change
Weight of Evidence:	The data and information in the administrative record supports this change in estimated size affected.
SWRCB Staff Recommendation:	After review of the available data and information, SWRCB staff concludes that the estimated size affected should be changed as presented.
Lines of Evidence:	

Line of Evidence	-N/A
Beneficial Use	CM - Commercial and Sport Fishing (CA)
Data Used to Assess Water Quality:	Change in Total Size and Size Affected. Change listing from the total length of 24 miles to 8.5 miles. Extent of affected area to be changed from all of Marsh Creek to Marsh Creek Reservoir to San Joaquin River.

Region 5

Water Segment:	Salt Slough (upstream from confluence with San Joaquin River)
Pollutant:	Boron
Decision:	Accept Area Change
Weight of Evidence:	The data and information in the administrative record supports this change in estimated size affected.
SWRCB Staff Recommendation:	After review of the available data and information, SWRCB staff concludes that the estimated size affected should be changed as presented.
Lines of Evidence:	

Line of Evidence	-N/A
Beneficial Use	MU - Municipal & Domestic
Information Used to Assess Water Quality:	The total size and size affected were reassessed by SWRCB staff and RWQCB staff, subsequent to the RWQCB's first change recommendation. This water body has been remapped and the revised extent impacted is 17 miles. The new extent is calculated by the Geospatial Water Body System (GeoWBS), using staff's best estimate of the extent to which water quality standards are not met.

Region 5

Water Segment:	Salt Slough (upstream from confluence with San Joaquin River)
Pollutant:	Electrical Conductivity
Decision:	Accept Area Change
Weight of Evidence:	The data and information in the administrative record supports this change in estimated size affected.
SWRCB Staff Recommendation:	After review of the available data and information, SWRCB staff concludes that the estimated size affected should be changed as presented.
Lines of Evidence:	

Line of Evidence	-N/A
Beneficial Use	AG - Agricultural Supply
Information Used to Assess Water Quality:	The total size and size affected were reassessed by SWRCB staff and RWQCB staff, subsequent to the RWQCB's first change recommendation. This water body has been remapped and the revised extent impacted is 17 miles. The new extent is calculated by the Geospatial Water Body System (GeoWBS), using staff's best estimate of the extent to which water quality standards are not met.

Region 5

Water Segment:	Salt Slough (upstream from confluence with San Joaquin River)
Pollutant:	Unknown Toxicity
Decision:	Accept Area Change
Weight of Evidence:	The data and information in the administrative record supports this change in estimated size affected.
SWRCB Staff Recommendation:	After review of the available data and information, SWRCB staff concludes that the estimated size affected should be changed as presented.
Lines of Evidence:	

Line of Evidence	-N/A
Beneficial Use	WA - Warm Freshwater Habitat
Information Used to Assess Water Quality:	The total size and size affected were reassessed by SWRCB staff and RWQCB staff, subsequent to the RWQCB's first change recommendation. This water body has been remapped and the revised extent impacted is 17 miles. The new extent is calculated by the Geospatial Water Body System (GeoWBS), using staff's best estimate of the extent to which water quality standards are not met.

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